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AND AIRSHIPS

No. 1375  
Vol. XXVII

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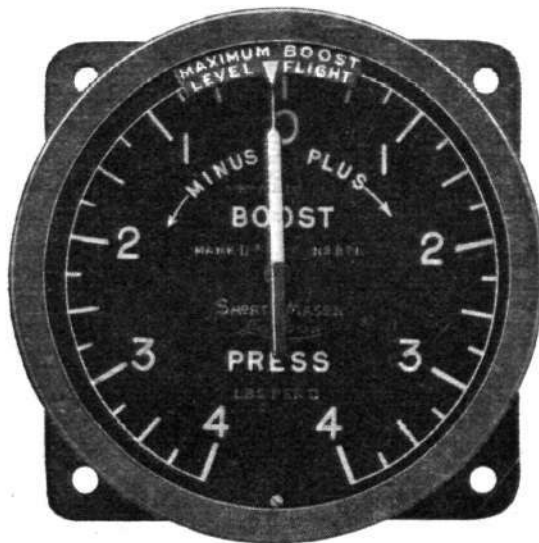
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## Fifth or xth?

STATISTICS are said to be the worst form of lie. A statistical figure on which the British nation has been spoon-fed for some time past is "Fifth."

The public has been told over and over again that Britain is the fifth air power in the world, and the public has not been made exceeding glad by the information. It has, in fact, been shocked and pained to think that Britain was only fifth. The figure, however, has always been meaningless, and now, thanks to a lucid article by the diplomatic correspondent of *The Daily Telegraph*, it is generally recognised as having no real value. The figure was arrived at by adding up all the aeroplanes in the possession of the Royal Air Force and also adding up all the aeroplanes in the possession of foreign Powers. Let those who would add up aeroplanes realise that in that form of mathematical exercise the rule obtains that two and two do not make four. They remain just two and two. To add flying boats to fighters is just about as useful as adding yards to cubic feet.

Every aeroplane is designed for a special purpose or for "general purpose," and the general purpose aeroplane is not likely to be much use if opposed in war to specialised aeroplanes. If the specialised machine is diverted from its proper use it often becomes comparatively useless. Specialisation of aeroplane design is perhaps in its infancy, but the tendency now is towards more and more specialisation. The Royal Air Force tends to become a congeries of groups of specialists.

### Home Defence

When public speakers or writers wish to soothe or to terrify the British public, they indulge too often in statistical comparisons with the air forces of other nations, and hence arose the reiteration of this figure "Fifth." The only useful comparison, for the purposes of the present moment, is with nations "within striking distance of these shores." On the British side, the only division of the R.A.F. which it is useful to consider is the Home Defence Force, which includes the Command

Air Defence of Great Britain, together with one squadron at Donibristle and one at Singapore—and the latter would not be of much use to us if some West European nation thought it would be a good thing to smash up our Jubilee celebrations. We cannot count with certainty on any reinforcement of the Command A.D.G.B. from the overseas Commands, and those Commands find the general purpose type more useful than any specialised type. In particular, they have no fighter squadrons at all. The Fleet Air Arm—camouflage the fact how you will—in war becomes an integral part of the Royal Navy, and must carry out naval duties before it can lend a hand at air defence of the United Kingdom. The Army co-operation squadrons would certainly accompany the Army wherever the latter might go. Yet it is only by adding up all those elements that the figure of fifth air power appears. When one takes Air Defence of Great Britain by itself, it is more than doubtful whether this country is fifth, even if one also excludes from the calculation the United States, Russia and Japan as not being within striking distance.

### A Distinction

It appears now that when Herr Hitler admitted that the German Army Flying Corps was equal to the strength of the Royal Air Force he meant that it was equal to the total strength of all the R.A.F. Commands, and that implies that it must be enormously superior to the Command A.D.G.B. It is suspected also that in certain classes of bombers the German machines can outrange and outfly any present British aeroplanes. Germany is certainly a nation within striking distance of these shores, and these facts, if they are facts, are not in the least consoling. It is some comfort to know that France is energetically working to bring her large Army flying corps up to date in the matter of machines, but it would not be consistent with Britain's dignity to rely for the protection of her shores on the strength of a friend. To spend more of our recent hard-won prosperity on armaments would be bitter, but we must not think of finding our protection in armaments paid for by the taxes of the people of France. The House of Commons will

debate the subject to-day, and we have no doubt that the Government will rise to the occasion in a manner worthy of the United Kingdom.

## West Africa

**I**SOLATION is the main drawback to many parts of the British Empire, and where the cost of railways would be too great, airways are beginning to take up the task of bringing the outlying tracts into communication with the outer world. Great areas of northern Queensland and Western Australia, and also parts of the frozen north of Canada have already found good cause to bless the discovery of flying. The colonies of West Africa, Nigeria, the Gold Coast, Sierra Leone and Gambia have suffered much from isolation, being not only isolated from the Mother Country but from each other. To some of them, too, the aeroplane is now to bring its beneficent influence.

Kano, in Nigeria, has several times seen flights of R.A.F. machines arrive from Egypt and the Sudan. These machines did not come straight from England, but they brought West Africa into touch with East Africa, and showed how help might be sent in time of trouble. More than once the R.A.F. machines have aspired to get on to the other three colonies, but bad fortune has beset their plans, and outbreaks of fever in the French territories which had to be crossed have caused the curtailment of tours. Once Sir Alan Cobham came with halting engines up from South Africa, and once Hinkler dropped down from the blue on to Bathurst aerodrome and explained that he had arrived from Brazil, and had not a guinea on him to pay the landing fee. These

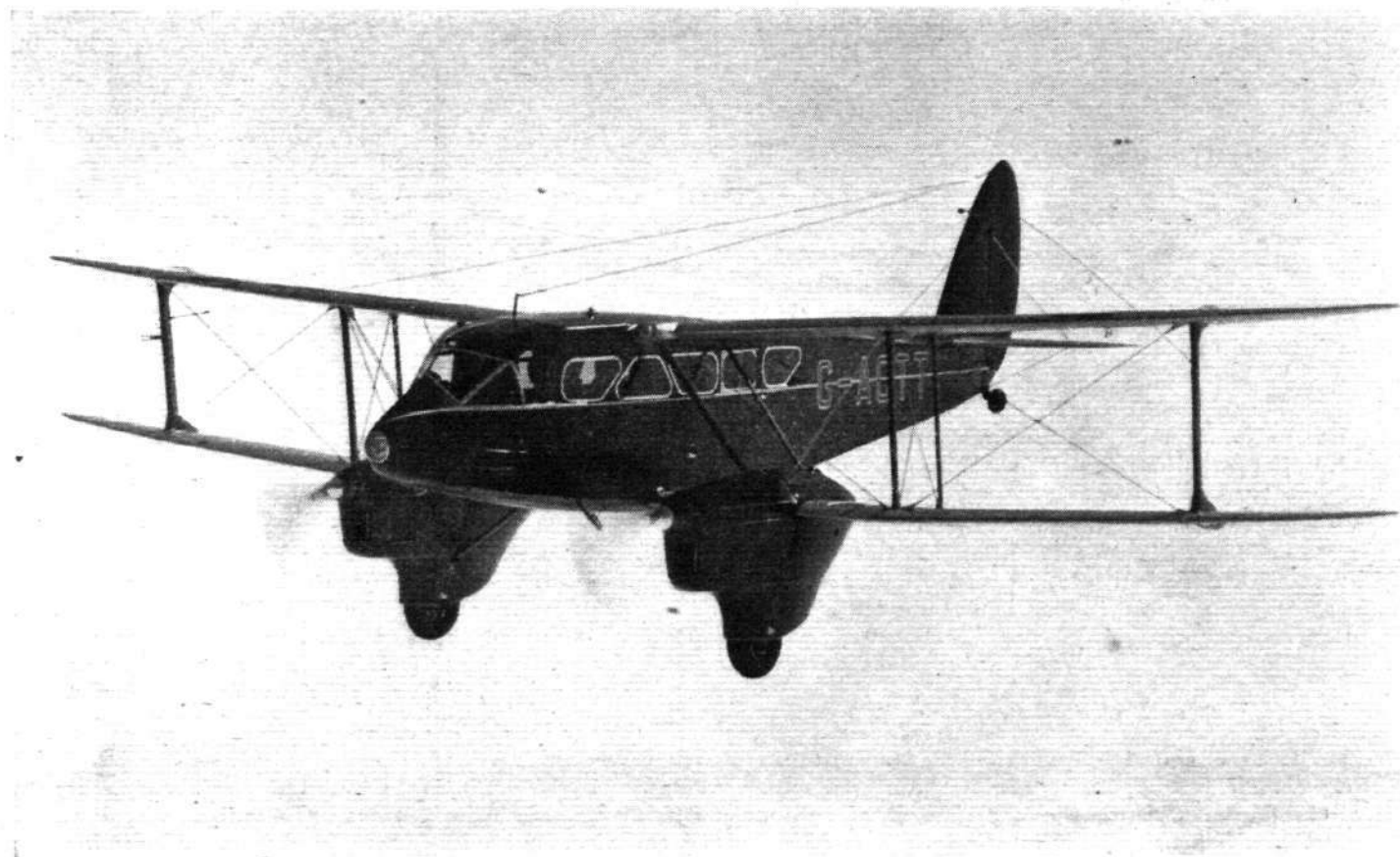
various visits were foretastes of what the future might hold, but they did nothing to help the dwellers in the colonies to get away quickly for short or long holidays.

Several weeks ago the Secretary of State for Air announced that a contract was being granted to Imperial Airways to run a regular service from Khartum to Kano and Lagos, the seaport of Nigeria, and this decision meant the turning of the tide and the coming of the end of West African isolation. Now it is announced that Imperial Airways have joined with the Elder Dempster Lines to form a new air transport company to be known as Elder's Colonial Airways. This is not the first time that a British shipping company has engaged in air enterprise, for soon after the war the Furness Withy company joined in a Bermuda and West Atlantic scheme, which seemed promising but proved to have been premature. It is, however, the first appearance of a shipping firm in the air transport business since air transport has established its reputation.

### The Proposed Routes

The new company proposes, in the first place, to link Nigeria with the Gold Coast, by means of services to Accra, Kumasi and Takoradi. This will entail crossing the French colony of Dahomey. Later it is hoped to push on to Freetown, the port of Sierra Leone, which will mean the crossing the French Ivory Coast and the Republic of Liberia. Little Gambia, with its port of Bathurst, seems at present too remote even for an air line, but who can say what the future holds?

The coming of the commercial aeroplane to West Africa is a new step in the history of our Empire, and the participation of a shipping line in the enterprise may be the forerunner of great developments.



**ICH DIEN :** It is fitting that the new De Havilland "Dragon Rapide" for H.R.H. the Prince of Wales should have been completed at this time—Their Majesties' Silver Jubilee, which, incidentally, marks a period of twenty-five years that has seen British aviation grow from a very small beginning. The machine (which is described on pages 474-475) was photographed by a *Flight* photographer in the bright sunlight above the heavy clouds which covered the Home Counties last week-end. Mr. Waite, one of the makers' test pilots, was delivering the machine to the Prince's hangar at Hendon.



# The Outlook

## A Running Commentary on Air Topics

### Confounding the Pessimists

THE few individuals who have always doubted the actual value of high speed travel or transport of any kind—and of air mails in particular—must have received a shrewd blow during the past month. Although Government estimates suggested that an average of 300 pounds of mail would travel to and from Australia each week, the actual weekly average has been between 450 and 550.

Obviously business people are using the service, and they, as a class, cast only bread that is to be returned four-fold. At present the charges are high and they will probably remain high until such a time as Imperial Airways and Qantas Empire Airways are in a position to triplicate the service and so carry more letters. Mail is already monopolising the passenger space on the Australia-Singapore section.

Undoubtedly a greater supply of services will create a proportionately greater demand.

### More Competition

DURING the coming year or two—until the Imperial fleet has been suitably expanded and improved—the only way in which the present thirteen-day service can be speeded-up is by night flying. The letters cannot grumble, but the passengers might, and if the demand for mail facilities increases as it is doing at present it may still be necessary to think of running separate mail and passenger services, one flying by both night and day, and the other flying only by day.

This summer K.L.M. will be using Douglas machines on a twice-weekly service to Batavia, so their schedule, which is at present a few hours longer than our own to Calcutta, will probably be shortened by a day or so. Until these duplicated services start, Imperials run on Tuesdays and Saturdays and the Dutch line on Wednesday, so there are three mail and passenger services. Competition, in the circumstances, may be a very good thing.

### In the House of Rimmon

"EQUITATION, Aviation, Natation"—could anyone imagine three more perfect examples of jargon?

Contrast them with the three perfectly good English words: Riding, Flying, Swimming, and the case becomes clear. As an acid test, imagine the effect of proposing that Col. Shelmerdine should be designated Director-General of Civil Flying! Why, the whole of officialdom would at once have a fit of apoplexy. It is, none the less, strange that, while no bloated aristocrat who has a canter in the Row ever talks about Equitation, and 'Arry after his annual dip at Margate never murmurs "Natation," everyone who indulges in the sport of flying is shameless in rolling the word "Aviation" round his tongue.

Yet if Julius Caesar and Cicero were to return to earth and heard the words Aviation and Aviator, they would certainly be puzzled. *Avis* certainly means a bird, but no educated Roman would have derived *Aviation* from that word, any more than an Englishman would talk about Birdation. No, Cicero would reflect, *via* means a road and *viator* means a traveller and *avius* means lost; therefore, *aviator* means a traveller who has lost his way. Certainly not a very good description of a Master Pilot.

Over thirty years of use may be held an excuse for indulging in classical barbarism and English jargon. *Flight* loves pure English, but even *Flight* must at times bow down in the House of Rimmon.

### Cloud Safety

ALTHOUGH the question is of small importance when flying over the great tracts of this country which are, comparatively speaking, aeronautically uninhabited, the height at which one should fly beneath a low ceiling is worth some thought. The standard rule in the vicinity of crowded aerodromes is to fly so that the horizon is clear at all times—in other words, about a hundred feet beneath the lowest cloud masses—in order that one may be able to see a machine in front, and so that a pilot coming out of the clouds may have "dodging room."

Some time ago a member of the staff of *Flight*, who had been practising aerobatics above a 2,000ft. cloud layer, came out of the base with his head in the cockpit and with his eyes glued on a turn indicator. Just as he realised that green fields were in view, he noticed another aeroplane floating about in the lower extensions of the mass, and about a quarter of a mile away. The machine might have just as easily been on the spot at which the cloud-flying pilot came out into the open, and the result would have been most displeasing, save to the 2,000,000 registered ghouls of the *Daily Blank*.

### Organised Altitudes

NATURALLY, every pilot prefers to be as far above ground as possible in case of engine failure, and an odd hundred feet in five hundred is quite important. But engines very rarely stop nowadays, and that same hundred will prevent heart failure, or worse, when a bunch of Auxiliary or R.A.F. cloud-flying experts suddenly fall out of the ceiling around one's little machine.

A few months ago the same member of the staff felt uncomfortable in a D.L.H. machine flying out of Berlin—with patches of Germany only occasionally visible—until he realised that the pilot had been ordered to fly at 800 metres, and that was that.

When everyone (except the private pilot, who will probably be given the ground layer, having no radio) flies at a predetermined altitude, it will be hard work for the pilots of machines ordered to fly at a height which involves blind flying for a complete journey. The passengers will be bored, too, but by that time they should be educated up to the whole business of "layer flying," and will read a book without distracted glances at the disappearing wing tips. How many passengers trouble to look out of the window of a long-distance express, and how much do they expect to see when they do?

### Miss Jean Batten

CONGRATULATIONS to Miss Jean Batten on a fine flight! That it is a record of sorts, and might have been a record of another sort if one or two troubles had not given trouble is of little importance; there is too much record-mongering in the popular Press nowadays. But it is a very admirable feat for a young girl in a four-year-old "Gipsy Moth" to fly out to Australia and to fly back from Australia as quickly as Miss Batten has done. It shows how things have progressed since Bert Hinkler made the first solo flight in a small aeroplane. What was a marvel then—and Hinkler's flight in the original "Avian" will always remain an outstanding performance—has now become a trip within the powers of any competent young girl in a sound, though not necessarily new, light aeroplane. Such feats are no longer pioneering; they are putting the private aeroplane to its proper use, which is to carry its owner about the world.

# THE ROYAL

*A Jubilee Appreciation of the In  
of Aeronautics D*

years, and two years later the Royal Flying Corps and the Royal Naval Air Service were engaged in war. Throughout the war the Prince of Wales was at the front as an active officer in the Army, and in the first three years of the war Prince Albert (now the Duke of York) was a midshipman in the Navy. As such he was present at the battle of Jutland. Then Prince Albert's health suffered, and, after an operation, he was unable to take a further active part in naval warfare. Accordingly, when the Royal Air Force was formed in 1918 he was transferred to it, and the youngest of the fighting Services was thus honoured by numbering one of the King's sons among its officers. In due course Prince Albert learnt to fly and quali-

(Left) His Majesty the King—a photograph taken when, in the early days of the Royal Air Force, he honoured that Service by wearing its uniform. (Below) H.R.H. the Prince of Wales, who, as is well known, takes an extremely practical interest in flying; he is seen talking to Scott and Black before the start of the Melbourne Air Race.

(Right) Their Majesties the King and Queen at Mildenhall before the start of the Melbourne race.

**W**HEN His Majesty the King or any member of the Royal Family supports a cause, the British public feels without questioning that that cause ought to be supported. That is one of the many advantages enjoyed by kingdoms over republics, especially when the kingdom has at its head such a Royal Family as the House of Windsor. The progress of flying in the British Empire has owed not a little to the interest taken in it by the Royal Family.

King Edward was on the throne when Orville Wright made the first aeroplane flight at Kitty Hawk and when, five years later, A. V. Roe (now Sir Alliott Verdon-Roe) showed that a Briton could design a better aeroplane than either French or Americans could do, and could teach himself to fly it. Queen Alexandra took great interest in the new discovery, and was a frequent visitor at flying meetings at Hendon in the early days before the Royal Flying Corps had come into existence.

That epoch-making event took place when King George had been on the throne some two





# FAMILY and AVIATION

*Taken by Their Majesties the King and Queen and Their Family in the Progress  
Twenty-five Eventful Years*

fied for his "wings," and is now an Air Vice-Marshal.

Some few years ago the Prince of Wales was gazetted an Air Marshal, and he has since been promoted to Air Chief Marshal. In practice, however, he has been more concerned with civil flying than with the R.A.F. When he bought his first aeroplane he is reported to have said that he did not know whether he would become keen on piloting himself, as at the moment he was more interested in riding and golf. The aeroplane would be a convenience to save his valuable time on journeys. Before long, however, the Prince was bitten by the charm of the air, and, without saying anything about it, learnt to pilot his own machine. He has never entered for any flying test, but in the opinion of good judges he can fly very well indeed and could easily obtain an "A" licence if he wished to do so.

He has owned a succession of aeroplanes and used them regularly for getting about the country on his manifold duties. His latest acquisition is described in this issue of *Flight*. He has also been a passenger in Imperial Airways machines on a number of occasions. He has entered machines for the King's Cup race several times, and once his Comper "Swift" gained the second prize. Moreover, the Prince has inspired his brothers the Duke of Gloucester and the Duke of Kent with his own love of the air, and the latter in particular is now obviously quite as enthusiastic about air travel as the Prince of Wales himself. During the Exhibition at Buenos Aires the two Royal brothers flew right across South America, and more recently the Duke and Duchess of Kent have covered many miles by air on their honeymoon.





(Left) The Duke of Kent, like the Prince of Wales, has flown many hours ; here he is seen after arriving by air at the R.A.F. Flying Club's Display at Hatfield in June last year. (Right) The late Queen Alexandra was a frequent visitor to Hendon ; in this photograph she is signing the visitor's book, held by Mr. Claude Grahame-White, at the Aerial Derby in 1919. Behind the Queen is Sir Dighton Probyn. (*Flight* photographs.)

The twenty-five years of King George's reign have seen much wonderful progress, but perhaps nothing more remarkable than the progress made in aeronautics.

Before the War there was no commercial flying, aeroplanes were flimsy contraptions, and engines most unreliable. The War produced improvements, but none of them made for commercial qualities in aircraft. Everything was sacrificed to performance. Commercial flying started with war-type machines in which 360 horse-power was used to carry two passengers to Paris.

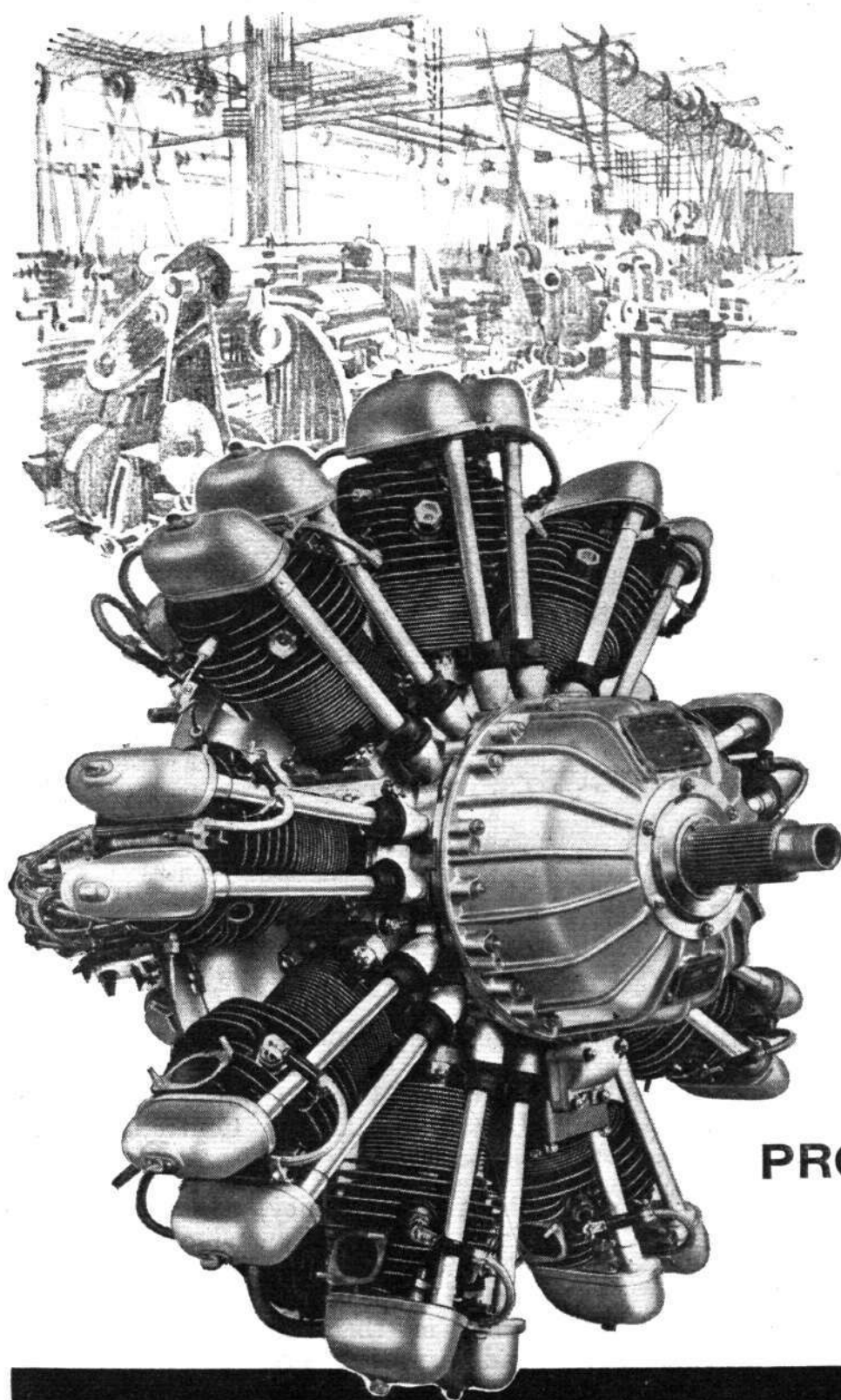
Years passed before reliability was sought by the use of multi-engined machines. Private flying may be said to date from the gliding meeting at Itford in 1922 and the subsequent meetings at Lympne, which culminated in the production of the "Moth" with "Cirrus" engine. In 1929 the Prince of Wales bought his first private aeroplane, a "Gipsy Moth," and since then he and his younger brothers have been indefatigable patrons of air travel. For the part they have played the Royal Family deserve the thanks of all.



At the top is the Vickers "Viantra" owned by the Prince of Wales, in which he flew to the Hendon Display last June ; to the right is the Comper "Swift" which he entered for the 1932 King's Cup Race, and in which Flt. Lt. Fielden gained 2nd place ; on the left is the Percival "Mew Gull" entered for the Race by Prince George in 1934 ; and at the bottom is the Prince of Wales' first machine—a "Gipsy Moth" which he acquired in October, 1929.





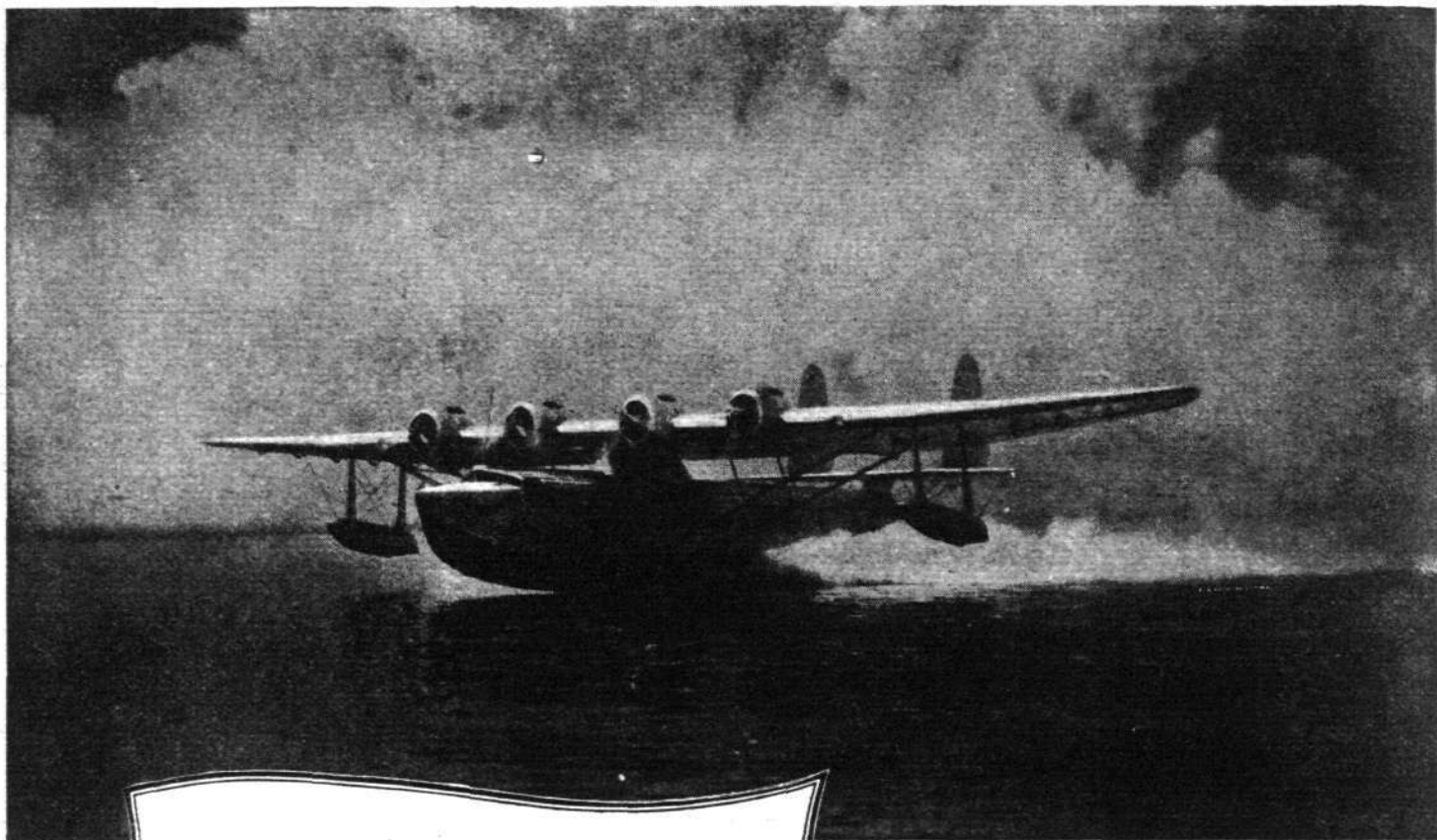


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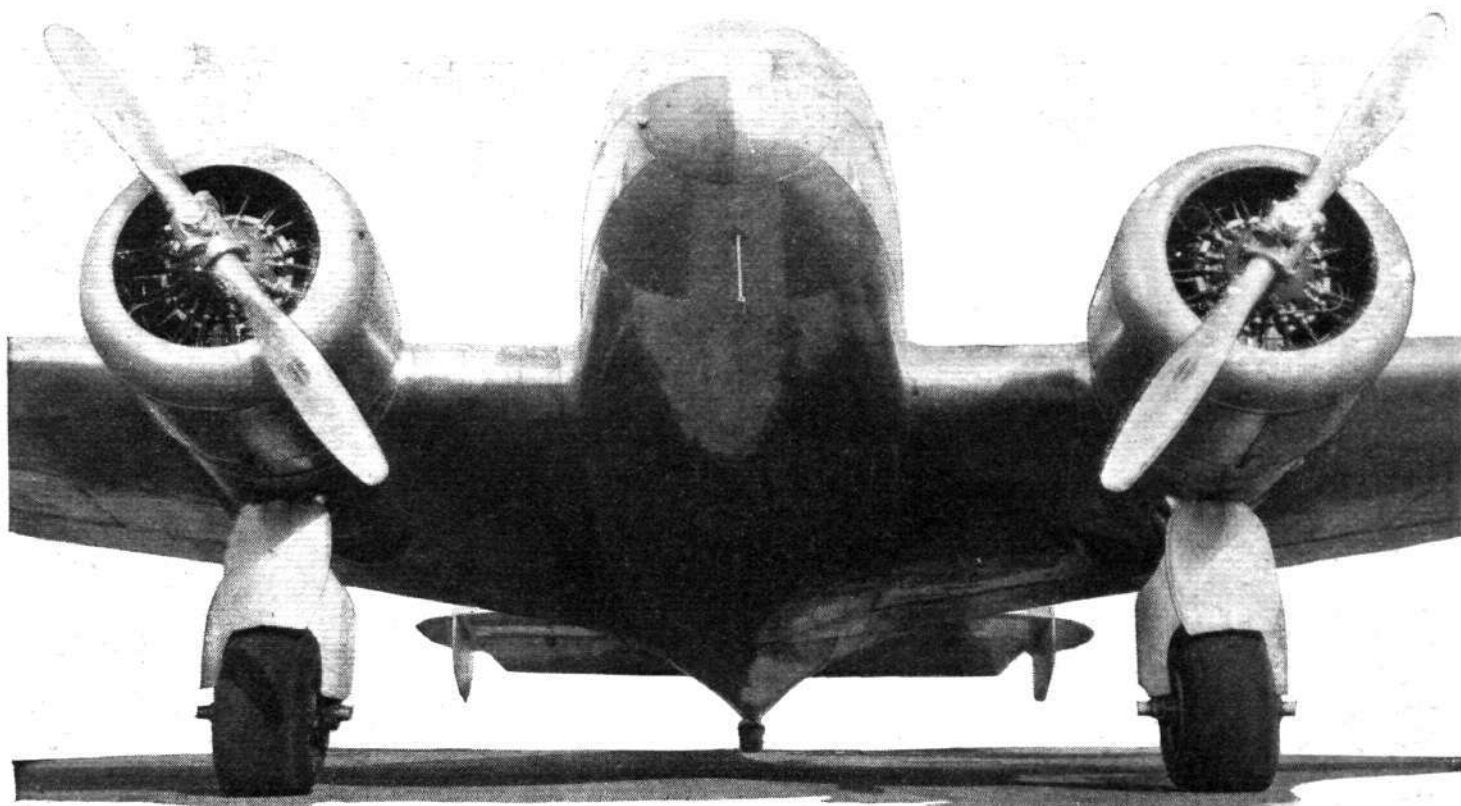
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*Obtaining Maximum Propulsive Efficiency at Various Speeds : A Modern Development Explained and Reviewed*

By C. M. POULSEN

**A**LTHOUGH it is now well over a century since the conception of giving variable pitch to a screw used for propulsion—one John Millington having taken out a patent in 1816—the application of variable, or, as it is now more frequently termed, “controllable,” pitch to an airscrew is of comparatively recent date. Nevertheless, many attempts have been made, and quite a considerable number of patents have been taken out. The mechanical difficulties are, however, by no means negligible, and in the earlier days of aviation, while aeroplanes were fairly slow, and before the introduction of superchargers for maintaining engine power at altitude, there was not so much to be gained by using controllable pitch. Modern conditions have become such that, for certain types of aircraft and for certain classes of work, the advantages to be derived from controllable pitch are great enough to make the extra weight, cost and complication worth while.

In the following and a subsequent article it is proposed to review the controllable-pitch airscrews which have achieved, or can reasonably be assumed to show promise of achieving, a fair degree of success. Before describing the mechanical details of these pitch-control mechanisms it may, however, be of assistance if a few of the fundamental principles of the airscrew as a power-transmitting device are briefly outlined.

## Airscrew Pitch

Everyone nowadays is familiar with the general appearance of an airscrew. Sometimes made of wood and sometimes of metal, it is, of course, used for converting the rotary motion of the engine crankshaft into horizontal pull or “thrust.” Its blades, of which there may be two, three or four, are set at an angle on the boss or hub, this angle being known as the pitch angle. Owing to this angle the airscrew will tend to advance along the line of its shaft, the advance being governed by the magnitude of

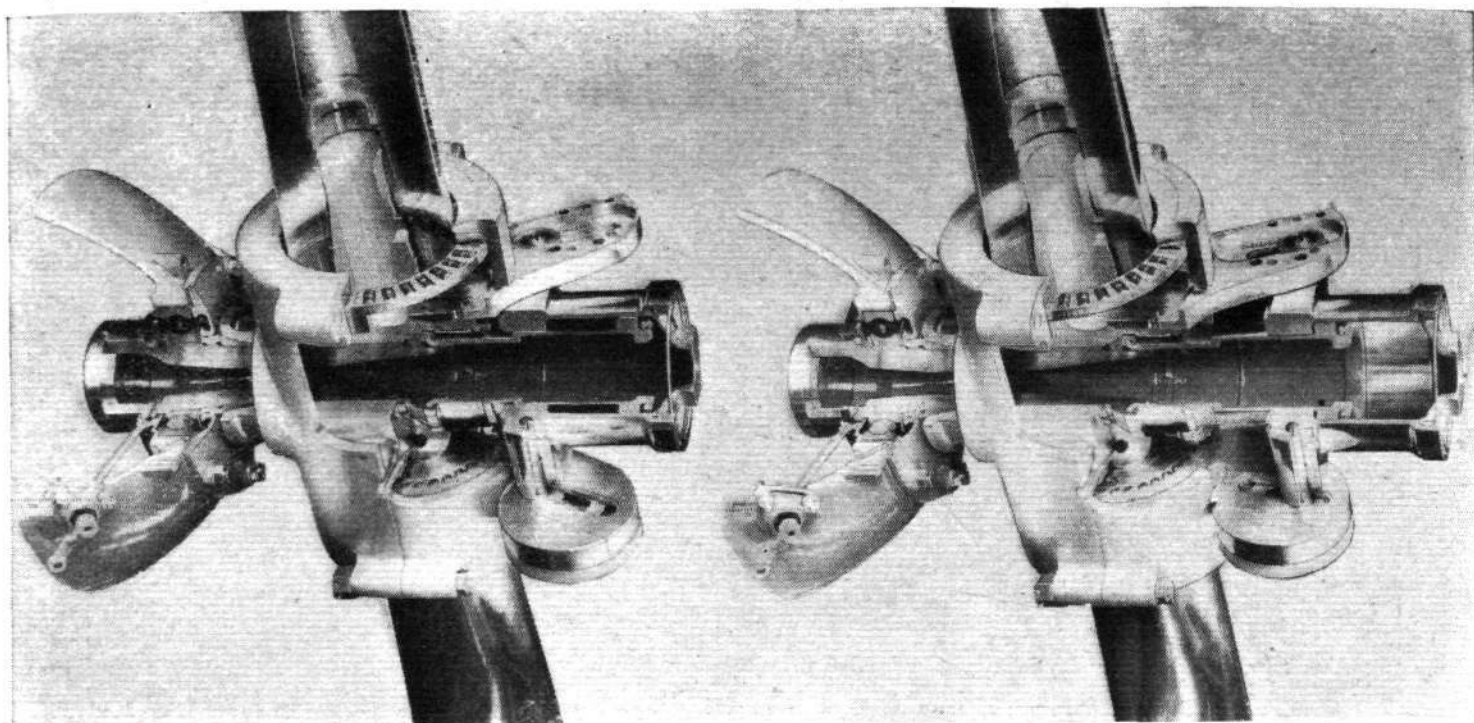
the angle. An airscrew in which the angle is such that it will advance the airscrew five feet in one revolution is said to have a five-foot pitch. A simple analogy is the advance of a nut along a threaded bolt when it is turned.

The airscrew may be considered as a somewhat peculiarly shaped aeroplane wing, a small element of its blade travelling along a helical or spiral path in space. The pitch angle is almost analogous with the angle of incidence of an aeroplane wing. Not quite, because the actual geometrical angle has to be a little greater than the desired angle of advance per revolution to allow for “slip.” If an airscrew blade is sawn through, it will be found that its section very much resembles the section of an aeroplane wing, but, of course, on a much reduced scale. The drag of the airscrew blade is exactly similar to the drag of an aeroplane wing, but is referred to as torque. The lift of the aeroplane wing becomes the pull, or “thrust” of the airscrew. Just as the characteristics of an aeroplane wing are expressed by lift and drag coefficients, so those of an airscrew are expressed by thrust and torque coefficients.

## Power-wastage

Reference has been made above to the airscrew as a power-transmitting device. Like all mechanical devices, it wastes a certain amount of power, the amount depending upon the airscrew efficiency, which in turn is influenced by a large number of variables. These notes are not intended as an introduction to the study of the aerodynamics of the airscrew, and it will not be possible to deal with all the factors which affect the efficiency. It will have to be accepted as a statement of fact that experience has shown that the efficiency of a given airscrew depends chiefly upon three things: the forward speed, the rotational speed, and the diameter.

Denoting forward speed by  $V$ , the rotational speed by  $n$  and the diameter by  $D$  it is found that the efficiency



Two cut-away views of the Hamilton Standard controllable-pitch airscrew. On the left the cylinder is in the "in" position, and the blades are at the high-pitch setting. On the right the blades are shown in the fine-pitch position. The pipe which leads the oil to the operating cylinder under pressure can be seen in the crank-case nose.

of an airscrew, generally denoted by  $n$ , varies as the ratio  $\frac{V}{nD}$ , reaching a maximum at a certain value of this ratio and then diminishing again fairly rapidly. In the diagram (p. 467) of efficiency curves it will be seen that when the forward speed is 0 and the ratio  $\frac{V}{nD}$  is 0, the efficiency is also 0. This is due to the fact that the airscrew is not doing useful work when it is not advancing. That is not, of course, to say that it is not giving *thrust*. A maximum efficiency is reached by the propeller, the degree of which is depicted in the left-hand curve, at  $\frac{V}{nD} = 0.47$  and its value is 0.68 approximately.

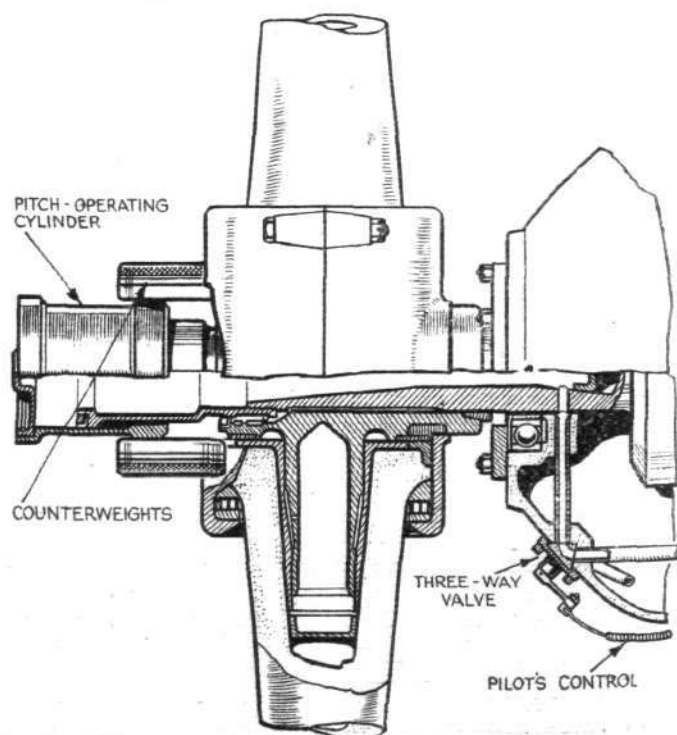
### Determining Efficiency

If it is assumed that the airscrew is one of 8ft. diameter, and that it is fitted to an engine running at approximately 2,000 r.p.m., it is obviously possible to evaluate the efficiency for a range of forward speeds. It will suffice for the present if the ratio  $\frac{V}{nD}$  is calculated for two speeds, the cruising speed and the take-off speed. If we assume for the former a speed of approximately 100 m.p.h. (147ft./sec.), the corresponding value of  $\frac{V}{nD}$  will be

$\frac{147}{33 \times 8} = 0.56$ ; ( $n$  is the rotational speed in *revolutions per second*). At this value the efficiency is found, from the left-hand curve, to be 0.64 approximately, or 64 per cent. This will mean that if the airscrew is driven by a 100 h.p. engine the airscrew is delivering 64 b.h.p. If the forward speed were greater, that is to say, if  $\frac{V}{nD}$  were 0.6 for example, the efficiency would have dropped to 50 per cent. approximately, and only one half of the horse-power would be converted into useful work. In other words, the thrust horse-power, as it is called, would be only 50. The relationship between thrust and power becomes obvious when it is remembered that horse power is expressed in pounds and feet per minute or second, one horse-power being equal to 55,000 pound feet per minute, or 550 pound feet per second, or 375 pound miles per hour. Any desired speed units can, of course, be employed,

provided care is taken to keep them consistent among themselves. In our case we use ft./sec. for the speed, and r.p.s. for rotational speed, and the thrust would therefore be 187 pounds, as 187 (the thrust) multiplied by 147 (the speed in ft./sec.) equals 27,500, which is 50 (the thrust horse-power of our airscrew) times 550 pound feet per second.

Turning to the airscrew efficiency at the moment of take-off, if it is assumed that the take-off speed is about 40 m.p.h. (say 60ft./sec.) the ratio  $\frac{V}{nD}$  is 0.23 nearly, and from the left-hand curve the corresponding efficiency is seen to be 0.48, or 48 per cent. This means that at the moment of take-off less than one half of the horse-power of the engine is delivered in the form of thrust by the

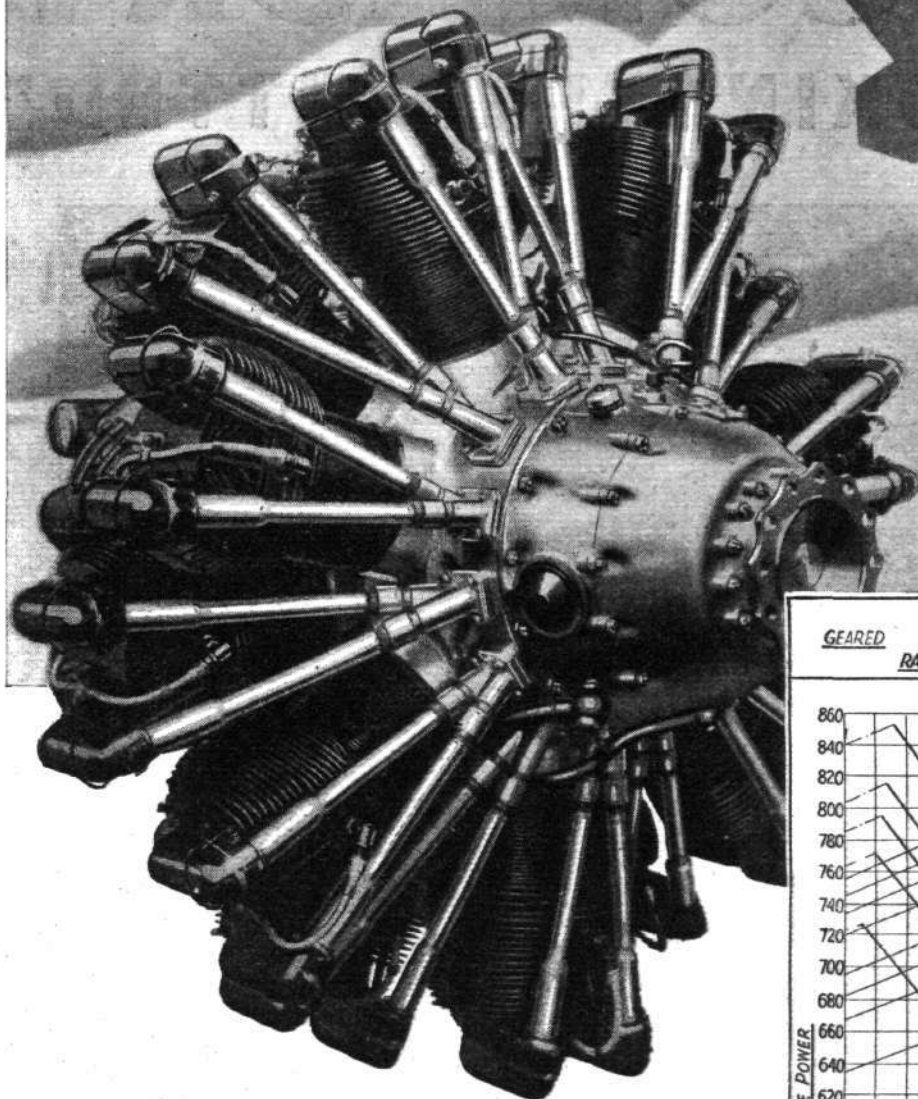


Part-sectioned view of the hub and pitch-operating cylinder of the Hamilton Standard airscrew.



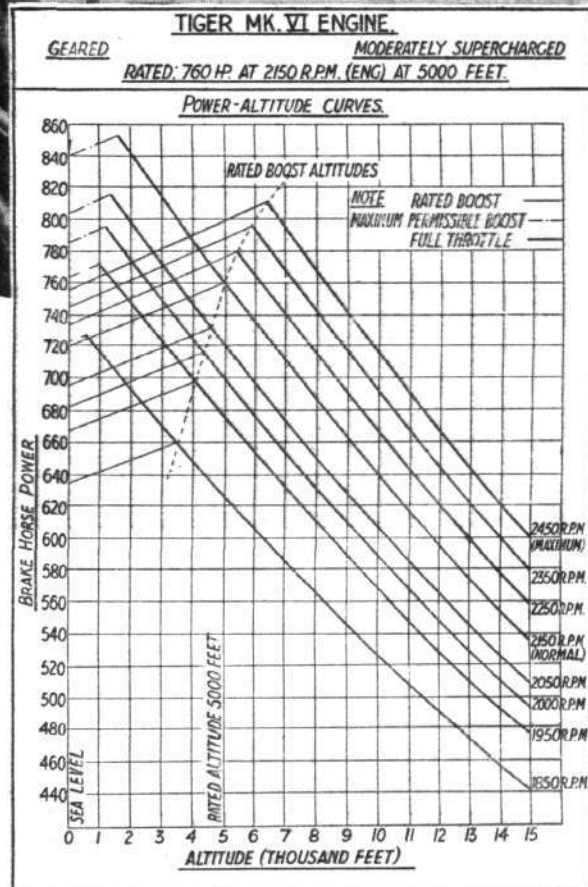
# TIGER VI

## AIRCOOLED ENGINE



### PERFORMANCE DATA

Normal engine R.P.M.	-	-	2150
Maximum engine R.P.M.	-	-	2450
B.H.P. for take-off at Sea Level at normal R.P.M.	-	-	840/850
Rated output at normal R.P.M.	-	760 at 5000'	
B.H.P. at maximum R.P.M.	-	810 at 6400'	
Fuel Specification	-	-	D.T.D.230
Minimum octane value	-	-	87



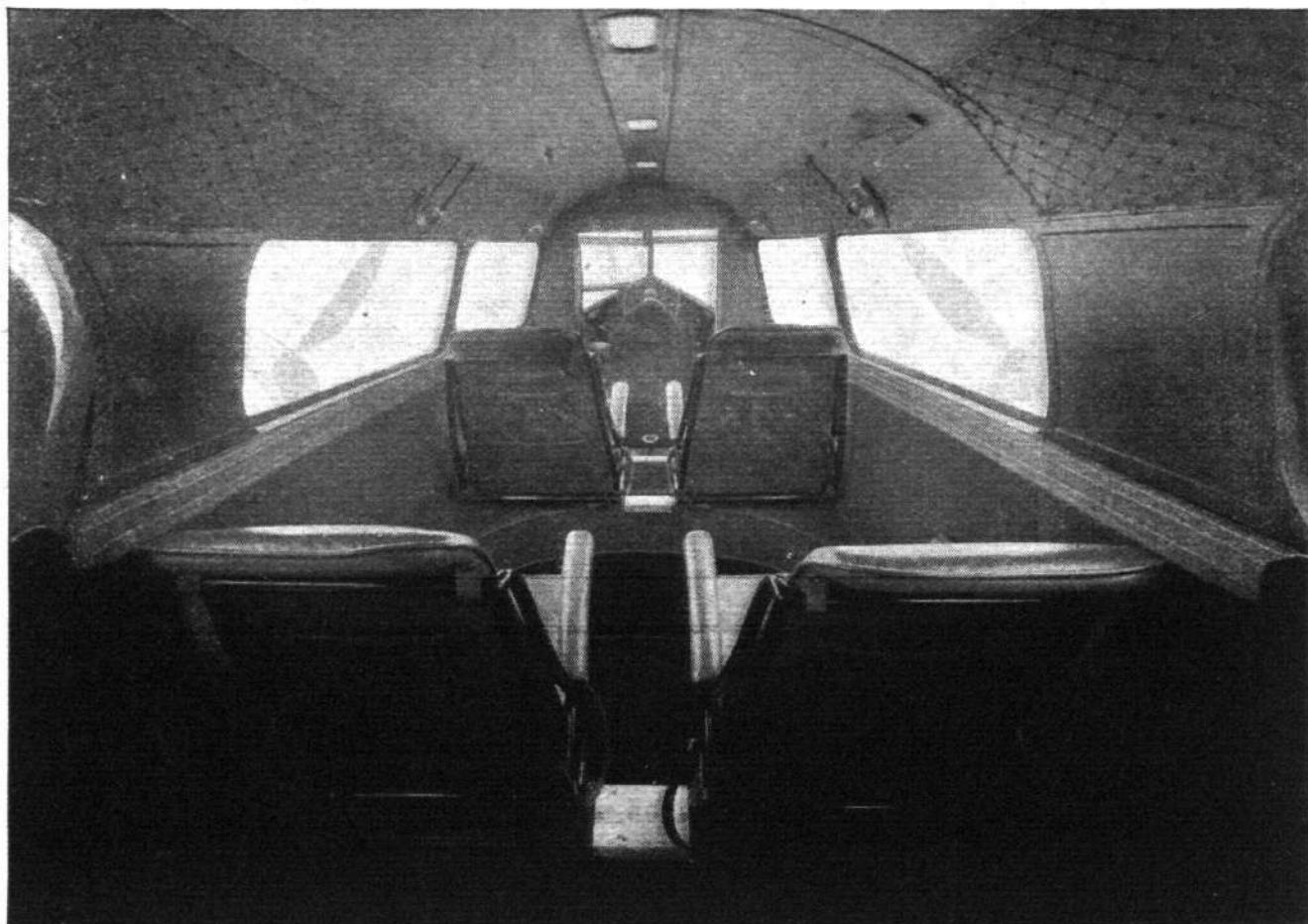
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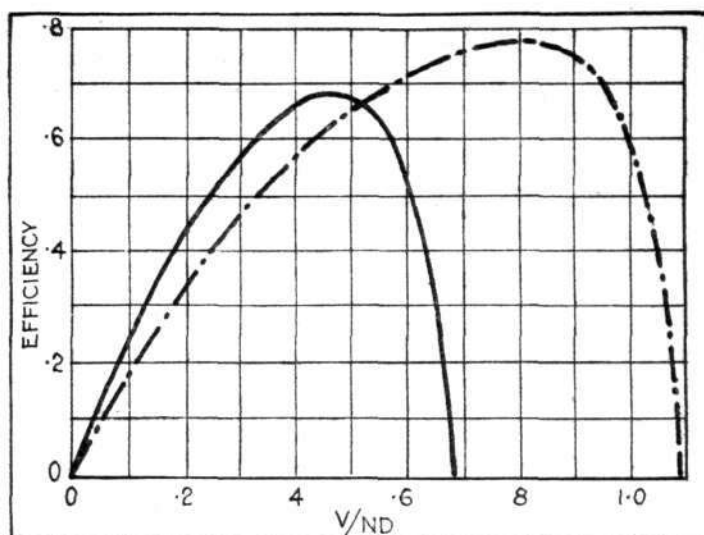
airscrew. During the acceleration prior to take-off the forward speed  $V$  is even smaller, and the airscrew is working at a lower value of  $\frac{V}{nD}$ , and consequently at even lower efficiency. Actually the engine speed varies slightly during the take-off. In other words,  $n$  varies with  $V$ , but not to any very great extent, and it is sufficiently near for our present purpose to assume it constant.

Mention has been made above of the fact that airscrew efficiency is influenced by several factors. Although the general efficiency curve of all airscrews is similar to those in the adjacent column, it does differ according to certain features. One of these is the ratio of pitch to diameter, usually expressed as  $P/D$ . The left-hand curve represents an airscrew of fairly low  $P/D$  ratio. The right-hand curve relates to an airscrew of greater  $P/D$  ratio. It is interesting to note that not only is the maximum efficiency of this airscrew greater, but the curve has a flatter top, so that actually its efficiency is better over a greater range of forward speeds. In fact, it is seen that from  $\frac{V}{nD}=0.55$  to  $\frac{V}{nD}=0.96$  the efficiency is equal to or greater than the maximum efficiency of the low-pitch airscrew.

Let it be assumed that the propeller, the efficiency of which is shown in the right-hand curve, is used on a much faster aeroplane, in which the cruising speed is 170 m.p.h. and the take-off speed 50 m.p.h. At 170 m.p.h. (250 ft./sec.), and at the same airscrew speed  $n$ ,  $\frac{V}{nD}=0.94$ , and the corresponding efficiency is 0.71, or 71 per cent. At the other end of the speed scale, at the assumed take-off speed of 50 m.p.h. (74 ft./sec.)  $\frac{V}{nD}=0.28$ , and the corresponding efficiency is seen to be 0.43, or 43 per cent.

### "Stalling" of Blades

Although they give a general idea of the fundamental principles involved, the two curves do not tell the whole story. For example, the coarser-pitch airscrew, the efficiency of which is shown in the right-hand curve, would probably slow down the engine at low forward speeds. This would have the effect, because, by reducing  $n$  the value of the ratio  $\frac{V}{nD}$  would be increased, of bringing the working point up on the efficiency curve, but unfortunately the power would be correspondingly reduced, so that probably there would be an overall loss. Taken to extremes, as in a machine with an unusually wide speed range, it means that the airscrew blades are stalled at low forward speeds of the aeroplane, exactly as an aeroplane wing is stalled, with resulting loss in power and thrust. A practical example of this occurred with one of the seaplanes in the last Schneider Trophy Contest. One airscrew was tried which would have given better efficiency at maximum speed than those actually used, but the blades were so badly stalled that the machine could not be persuaded off the water! This is, of course, an extreme example, and



Two typical curves which show the comparative efficiency of two airscrews of different pitches. This figure should be studied in conjunction with the text.

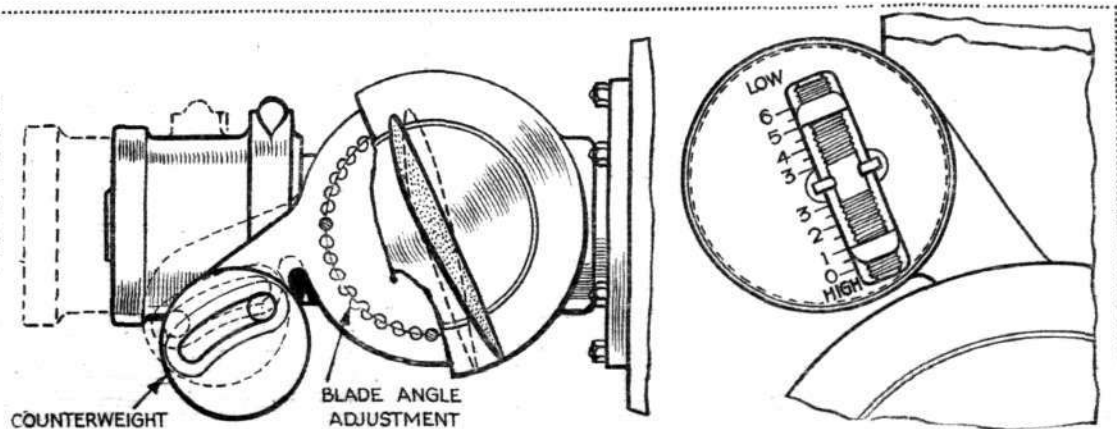
rarely does one get a machine with almost enough power to "helicopter" straight upwards and yet incapable of getting off, but it serves to show what *can* happen in actual practice.

An examination of the efficiency curves shows at once that if one could find means of always keeping the airscrew at the peak of its efficiency curve a great deal of extra thrust horse-power would become available which could either be used to increase the performance, notably the take-off and the climb (the best rate of climb occurring in most aeroplanes nearer to the stalling speed than to the maximum speed), or it would enable an engine of lower power to be used for the same performance.

A few moments of contemplation reveal that there are two obvious ways in which this could be achieved: By varying  $n$ , the rotational speed of the airscrew, and thereby selecting the value of  $\frac{V}{nD}$  giving best efficiency, or by varying the pitch/diameter ratio. The former method would consist in a variable gearing between the engine and the airscrew, and the latter in varying the pitch or the diameter. So far, no one has succeeded in designing an airscrew of variable diameter, but many are in existence in which the pitch is changed. The efficiency curve of a variable pitch airscrew would form an envelope curve over the two fixed-pitch curves shown. At very low speeds the pitch/diameter ratio would be low, and therefore able to give a high efficiency for take-off and climb, while at high speed the ratio would be high, and giving a still higher efficiency. Most efficient of all would, of course, be a combination of variable speed and variable pitch, but the mechanical difficulties would be great and the extra weight considerable.

The choice between variable gear ratio and variable pitch is influenced by very many considerations, and it would take us too far to go into them here. Suffice it to say

Slotted counterweights and pitch-angle adjustment on the Hamilton Standard. On the right is a view of one of the limit stops which permit independent adjustment for high-pitch and low-pitch positions independently.



that hitherto the two-speed airscrew reduction gear has not come into practical use, although the two-pitch position airscrew has become used extensively of recent years. The two-speed gear box may, however, be heard of soon. It seems at least worth a practical trial.

The Supermarine Schneider seaplane has been quoted as an outstanding example of a type of aircraft which would have benefited considerably by being fitted with a controllable-pitch airscrew. At the time no such airscrew was available—at any rate in a sufficiently reliable form. In modern times other classes of aircraft have been produced in which this type of airscrew is worth while. By no means all classes of machine need it, some benefiting to a much greater extent than others. There is no space here to go into details on the subject, but we would refer readers to the very excellent article by Capt. C. C. Walker and Mr. R. M. Clarkson, which was published in *Flight* of August 9, 1934. Aeroplanes with a very wide speed range (such as modern machines with small wings, high wing-loading, and using flaps and slots to give low landing speed), and those using supercharged engines to maintain engine power at altitude, are among those which can benefit from the controllable-pitch airscrew. Improved cruising economy should also be attainable because, instead of throttling the engine back to cruising power, its speed of revolution may be kept down by setting the airscrew to a coarser pitch, keeping the throttle open.

### The Hamilton Standard

Although many firms and individuals have experimented with controllable-pitch airscrews for a number of years, none has yet become so extensively employed as that of the Hamilton Standard Propeller Company, of East Hartford, Connecticut, U.S.A. It is therefore very fitting that this review of the more important examples should begin with a description of the Hamilton, the more so as the de Havilland Aircraft Co., Ltd., has secured the British rights in the construction, and has laid down an extensive plant at Stag Lane Aerodrome for the manufacture of these airscrews.

Introduced for commercial use in the United States of America in 1933, the Hamilton Standard controllable-pitch airscrew has aluminium alloy blades of the type known as "semi-hollow"; that is to say, the outer portions of the blades towards the tips are solid and of very thin section to give high aerodynamic efficiency, while the blade roots are hollow and of circular section and large diameter, thus providing great bending and torsional strength. When the airscrew is mounted on a large radial engine the fact that the blade roots are round probably detracts little from the efficiency. When used on engines of small frontal area, such as the "in-line" type, it is probably advisable to adopt a different shape of root.

Each blade root has a shoulder formed on it, between which and the hub barrel flange is interposed a roller thrust bearing.

Loads due to centrifugal force are necessarily large, and the roller thrust bearings are introduced to reduce the force necessary to alter the pitch of the blades. The hub barrel is, of course, split along its centre, the two halves being bolted together.

Operation of the pitch-setting mechanism is by oil pressure from the engine. The hollow propeller shaft terminates at its front end in a piston over which fits a cylinder. A three-way valve is under the control of the pilot, and when set to admit oil under pressure from the engine it allows oil to flow via a collector ring into the interior of the front end of the crankshaft, which is, of course, connected to the propeller shaft. The pressure oil forces the cylinder forward, away from its piston, and this movement of the cylinder is used for altering the pitch angle of the blades.

### Pitch-operation

Each blade root is provided with a counterweight carried on a bracket. When the cylinder moves forward under the pressure of the oil a special ball bearing, the outer race of which is attached to the bearing shaft, rolls in a curved slot in the counterweight bracket. In doing so it causes the counterweight to move inwards towards the crankshaft axis, and as the weight moves inwards it forces the blade to which it is attached into low-pitch position.

For changing into the high-pitch position the pilot turns the three-way valve so that it permits the oil from the cylinder to flow back along the crankshaft, through the collector ring into the crank case. The force necessary to move the cylinder back is derived from the centrifugal counterweights which, by acting against the ball bearing in the cam slot, forces the cylinder to move inwards, thus forcing the oil back into the crank case. At the same time the counterweight brackets move outward and turn the airscrew blades into the high-pitch position.

The ends of the cam slot itself would provide limits to the amount of movement which the blades can be given, but as it is desirable to be able to set the pitch adjustment for fine and coarse pitch independently, a slight complication has been introduced. This takes the form of a threaded screw with a nut at each end. This screw is inserted in the cam slot in the counterweight, and is prevented from turning by a pin. An extension on the end of the bearing shaft provides a seating for the nuts at each end of the stroke, thus limiting the pitch change movement.

The inside of the counterweight bracket is provided with 49 semi-circular holes, and the outsides of blade bushes have 36 semi-circular holes. This makes it possible to locate the two moving parts by four pins spaced 90 deg. apart, and also to change the relative setting of the counterweight brackets to the airscrew blades in steps of one degree. Used in conjunction with the limit stop-nuts in the counterweights, this arrangement permits the selection of any desired high- and low-pitch angles within the pitch range for which the airscrew was designed.

A development of the Hamilton Standard two-position airscrew was introduced a short time ago. In this the pitch is variable over the whole range, and is set automatically.

(To be concluded next week.)

## Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in this list.

- May 5. R.Ae.S. Garden Party, Fairey Aerodrome, Great West Road.
- May 11. Aviation Day, Phoenix Park, Dublin.
- May 19. Deutsch de la Meurthe Cup, Aero Club de France.
- May 23. Jubilee Air Ball, Air League of the British Empire, at the Dorchester Hotel, London.
- May 25. Empire Air Day, Air League of the British Empire.
- May 29. Household Brigade Flying Club. Night-Flying Demonstration, Heston.
- May 30. Wilbur Wright Lecture, by Mr. Donald W. Douglas, Science Museum, South Kensington.
- June 1. Brooklands "At Home."
- June 1-15. Lisbon Aero Show.
- June 7-11. Whitsun Flight through Austria, Oesterreichischer Aero Club.
- June 8. London Aeroplane Club. Garden Party, Hatfield.
- June 8. Official opening and garden party, Witney and Oxford Aero Club.
- June 15. R.A.F. Flying Club Annual Display, Hatfield.
- June 15. Bristol and Wessex Aeroplane Club, S.B.A.C. Challenge Cup, Whitchurch.
- June 16. Scottish Flying Club Display, Renfrew.

- June 29. Royal Air Force Display, Hendon.
- July 1. S.B.A.C. Display, Hendon.
- July 6. Royal Air Force Fly-past before H.M. the King at Duxford.
- July 7. Douze Heures D'Angers, Aero Club de France.
- July 13. Opening of Leicester Municipal Airport.
- July 20. Opening of Brighton Hove and Worthing Municipal Airport, Shoreham.
- July 20-21. Coupe Armand Esders, Aero Club de France.
- July 28. Private Owners' Garden Party, Ratcliffe, Leicester.
- Aug. 17. Round the Isle of Wight Air Race and Portsmouth Air Trophy.
- Aug. 24-25. Third International Flying Meeting, Lympne.
- Aug. 24-25. Cinque Ports Club. International Flying Meeting and Wakefield Cup Race.
- Aug. 24-30. Raduno del Littorio, Rome. Reale Aero Club d'Italia.
- Sept. 4-18. Jungfrau-Joch Concours, Aero Club de Suisse.
- Sept. 6-7. King's Cup Air Race.
- Sept. 14. Cinque Ports Club. Folkestone Aero Trophy Race.
- Sept. 15. Gordon Bennett Balloon Race, Warsaw.
- Oct. 12-28. International Aircraft Exhibition, Milan.

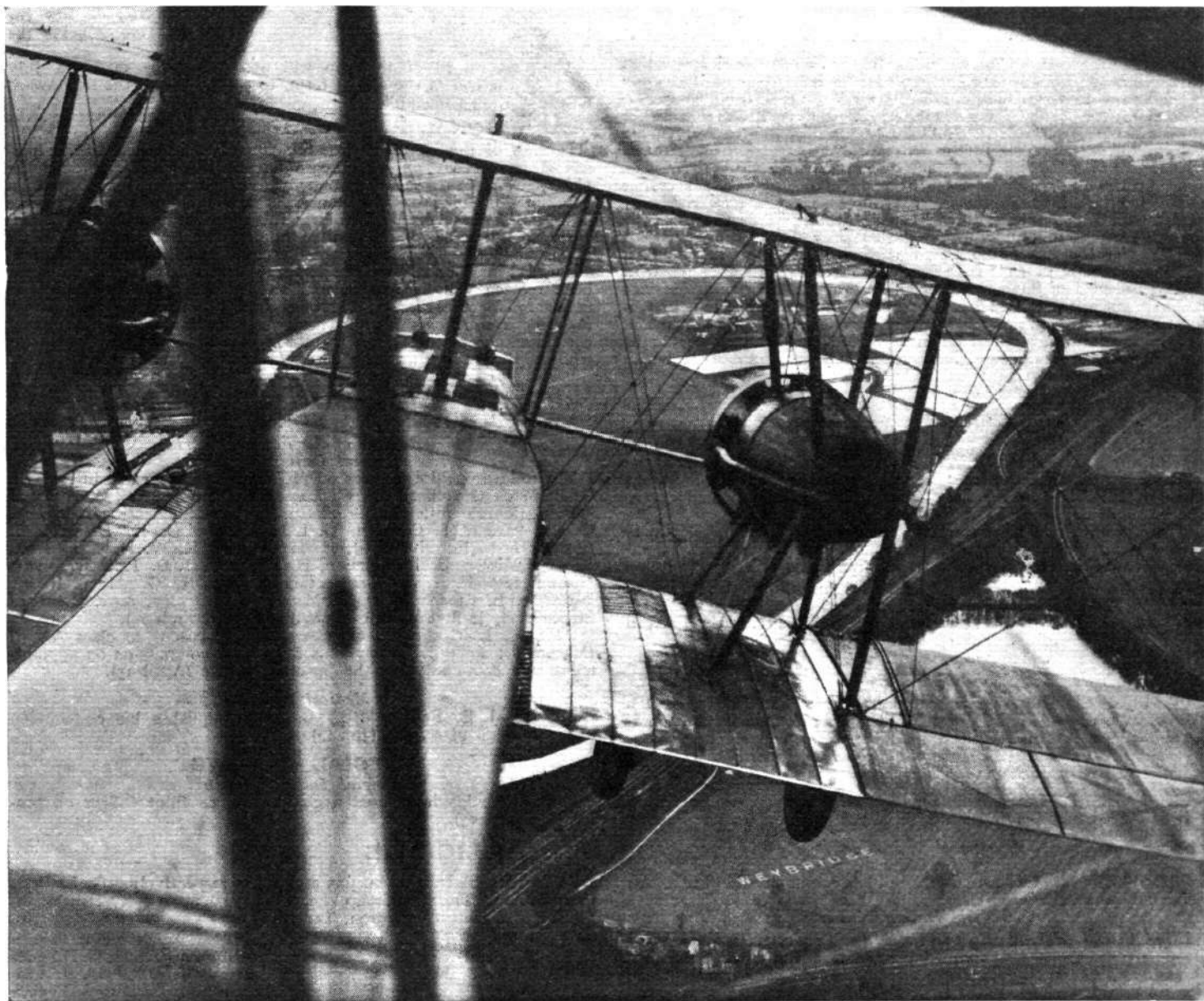


# THE ROYAL AIR FORCE

SERVICE NOTES AND NEWS



AIR MINISTRY ANNOUNCEMENTS



**THE OBJECTIVE :** An impressive photograph from the tail cockpit of a "Pegasus"-engined Vickers "Virginia" approaching Brooklands.

## THE DISPLAY AND THE JUBILEE

As already announced, the R.A.F. Display at Hendon will be held on Saturday, June 29. This year it will have a connection with the Jubilee gathering at Mildenhall and the Air Review at Duxford on July 6. There will be a big fly-past of some nine or ten squadrons at Hendon, and this will be a foretaste of the still larger and more imposing fly-past to take place at Duxford.

## A "ROTA" FOR THE COURAGEOUS

H.M.S. *Courageous* will shortly ship a "Rota" and carry out a series of tests to discover its suitability for naval work. Several officers of the Fleet Air Arm have been through a course of flying "Rotas" at Old Sarum. If the Navy decides to add Autogiros to its air establishment, we may expect that a new name will be found for the class. "Rota" is distinctly an Army name, and applies only to the C30 type.

## CLOSING DOWN OF FELTWELL LANDING GROUND

Feltwell landing ground is closed to all aircraft until further notice.

## THE CAIRO-CAPETOWN FLIGHT

Four Vickers Victoria aircraft of No. 216 (Bomber Transport) Squadron, R.A.F., left Heliopolis on April 24 on a flight to South Africa. Wing Cdr. C. W. Mackey is in command.

## EXTRAORDINARY ROYAL AIR FORCE FLYING ACCIDENT

The Air Ministry regrets to announce that No. 363394 Leading Aircraftman Wilfred Willoughby Green (a passenger) lost his life at Catterick as the result of falling from an "Audax" aircraft of No. 26 (Army Co-operation) Squadron, Catterick, on April 29.

## No. 5 FLYING TRAINING SCHOOL

The undermentioned officers and airman pilots have been awarded special assessments as shown hereunder on completion of a course of *ab initio* flying training at No. 5 Flying Training School:—

*Distinguished Pass*

A/P/O. G. S. A. Parnaby, A/P/O. R. C. Crawford, A/P/O. E. R. Bitmead, A/Sergt. Buck, R.G., A/Sergt. Hopkins, H.P.

### INTER-COMMAND FLIGHTS

A number of inter-Command formation flights by Royal Air Force units have been arranged for this year. No. 202 (Flying Boat) Squadron at Malta is still "temporarily" equipped with Fairey 3F float-planes, but should soon receive a complement of "Scapas." When these have been received, the squadron will make a flight to Aden and back, a journey of about 6,600 miles, in October. No. 203 (F.B.) Squadron at Basra, which journeyed to Melbourne last year, will take its "Rangoons" to Aden and back, also in the autumn. The Aden squadron, No. 8 (Bomber) Squadron, which is now receiving "Vincent's" in place of its present 3F's, will coast round Arabia to Iraq and visit Baghdad, returning *via* Palestine and Egypt. No. 70 (Bomber Transport) Squadron at Hinaidi will send "Victorias" to carry the baggage and spares of another squadron, probably No. 55 B.S., on a flight from Baghdad to Singapore and back, a distance of some 10,000 miles. Certainly the overseas squadrons of the R.A.F. do see the world.

### A.I.D. VACANCY

A vacancy exists for an examiner in the Aeronautical Inspection Directorate at No. 2 Stores Depot in connection with the inspection of R.A.F. explosives, and applications are invited from short service and medium service officers who will shortly be due to be transferred to the reserve. Applications are also invited from members of the staff serving in the Aeronautical Inspection Directorate. Candidates must be not more than 30 years of age on April 1, 1935, and must be prepared to serve abroad. The appointment carries a salary of £243 per annum on a scale £243 per annum rising by eight annual increments to £337 per annum. The post will be regarded as a training one, and the selected candidate will be eligible for consideration for appointment to assistant inspector, grade II, on a salary scale of £333 rising by annual increments to £392, with a good prospect of further advancement provided satisfactory service is given. Whilst under instruction, the examiner will have to perform the duties normally performed by an A.I.D. examiner and in addition those performed by more junior grades, in order that he may thoroughly understand and practise all the detail work which

he will in later years have to supervise. The normal tours of duty overseas are of four years' duration, two years in Iraq and two years in the Middle East, and are followed by a period of home service of approximately six to eight years. Applications, stating age, qualifications, etc., should be submitted in writing, through the usual channels, to the Secretary, Air Ministry, not later than April 29, 1935.

### THE SIR THOMAS BERRIDGE CUP

A silver cup, originally presented to the late Sir Thomas Berridge by the Committee of the Royal Air Force Voluntary Hospitals, has been presented to the Royal Air Force by Major F. D. Berridge and his sister.

It has been decided that the cup, which will be known as the 'Sir Thomas Berridge Cup,' shall be held at the Royal Air Force College, Cranwell, and awarded each half-year to the squadron, at the College, to which the flight cadet belongs who, in the final order of merit following the passing-out examination, obtains the highest aggregate of marks in all subjects and thereby gains the "King's Medal."

The first award of the cup will accordingly be made in July next, at the end of the spring term, to coincide with the first award of the "King's Medal."

### ADDITIONAL RE-ENGAGEMENTS OF AIRMEN

In view of the increased requirements of experienced airman personnel consequent on the programme of expansion approved by H.M. Government, the Air Council have had under reconsideration the limits imposed on the number of airmen allowed to re-engage to complete time for pension. As the result of their investigation, they have decided that a limited number of re-engagements, additional to those already sanctioned, can be made, and the claims of all airmen now serving whose applications for re-engagements have been refused will be reconsidered on their merits. It will not be necessary for the airmen concerned to resubmit their applications for re-engagement as all the necessary information is already in the possession of the Officer i/c Records, who will notify all airmen who are selected, at an early date, through the usual channels.

## ROYAL AIR FORCE GAZETTE

*London Gazette, April 23, 1935*

### General Duties Branch

The following Flying Officers are promoted to the rank of Flight Lieutenant:—A. H. Houghton (Dec. 28, 1934); E. J. Corbally (Jan. 27); M. J. Adam (Feb. 15).

P/O. M. F. B. Read is promoted to the rank of Flying Officer with effect from March 27 and with seniority of Jan. 15.

The following Pilot Officers are promoted to the rank of Flying Officer:—H. V. Kennedy, J. R. L. Rumsey, E. P. P. Gibbs (April 2); N. G. Mulholland (April 15).

Flt. Lt. M. C. Pascoe is transferred to the Reserve, class A (April 15).

### Stores Branch

Flt. Lt. W. H. Harrison is placed on the retired list (April 21). The permanent commission of P/O. on probation A. L. Britton is terminated on cessation of duty (April 15).

### Medical Branch

Flt. Lt. T. D. Lawson Bolan, L.R.C.P. and S., is granted a permanent commission in this rank (April 24).

## ROYAL AIR FORCE RESERVE

### Reserve of Air Force Officers General Duties Branch

The following Pilot Officers on probation are confirmed in rank:—G. R. Mack (March 2); D. W. Llewellyn (March 5); C. G. Holland-Martin (March 10); D. B. Allison, G. K. Brackenridge, A. M. Carroll, H. St. J. Coghlan, G. I. L. Corder, D. H. Dey, E. C. Eaton, M. L. Formby, P. J. H. Harrington, K. W. Hole, T. S. R. King, L. Malec, B. J. Sciortino, H. S. Smith, J. G. Tait, M. Wyatt (March 12); R. E. Stevenson (March 14); R. G. Allen, R. K. Beale, L. B. Greensted, D. M. Maw, H. D. Ripley, A. K. Lennard Stephenson, J. F. Wells, R. G. Wilberforce (March 19).

P/O. E. L. Gosling is transferred from class C to class AA (i) (March 27); F/O. J. C. Reynolds resigns his commission on appointment to a commission in the Special Reserve (April 15).

### Medical Branch

Flt. Lt. J. E. Foran, M.B., B.Ch., relinquishes his commission on completion of service (Jan. 4).

## SPECIAL RESERVE

### General Duties Branch

J. C. Reynolds is granted a commission as Pilot Officer on probation (April 15).

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

### General Duties Branch

**Wing Commander.**—J. C. Slessor, M.C., to No. 3 (Indian) Wing Headquarters, Quetta; to command vice Group Capt. M. Henderson, D.S.O., 13.3.35. E. L. Tomkinson, D.S.O., A.F.C., to Headquarters, R.A.F., Mediterranean, Valletta, Malta; for duty as Senior Air Staff Officer, vice Wing Cdr. C. C. Miles, M.C., 12.4.35.

**Squadron Leaders.**—E. A. Fawcus, to Headquarters, R.A.F., Iraq, Hinaidi; for Equipment (Engineer) duties vice Flt. Lt. R. Kellett, 9.4.35. A. L. Fiddament, D.F.C., to No. 30 (Bomber) Squadron, Mosul, Iraq; to command vice Sqn. Ldr. P. R. T. J. M. I. C. Chamberlayne, A.F.C., 26.3.35. B. A. Malet, D.F.C., to Headquarters, Palestine and Transjordan, Jerusalem; for Signals duties vice Flt. Lt. J. R. D. Goadsby, 9.4.35.

**Flight Lieutenants.**—V. H. Clift, to No. 203 (Flying Boat) Squadron, Basrah, Iraq, 26.3.35; H. P. F. Fagan, to No. 216 (Bomber Transport) Squadron, Heliopolis, Egypt, 25.3.35. C. A. Horn, to No. 4 Flying Training School, Abu Sueir, Egypt, 9.4.35. D. N. Roberts, to Station Headquarters, Amman, Transjordan, 9.4.35. P. V. Williams, to Royal Air Force College, Cranwell, 9.4.35. L. Young, to Headquarters, R.A.F., Halton, 11.4.35. W. K. Beisiegel, to No. 43 (Fighter) Squadron, Tangmere, 15.4.35. C. E. Chilton, to Special Duty List whilst employed with South African Air Force on interchange with South African Air Force Officer, 11.4.35. E. F. Haylock, to Headquarters, Western Area, Andover, 15.4.35. P. E. Hudson, to No. 6 Flying Training School, Netheravon, 15.4.35.

**Flying Officers.**—R. E. G. Brittain, to No. 208 (Army Co-op.) Squadron, Heliopolis, Egypt, 9.4.35. R. J. W. Barnett, to School of Naval Co-operation, Lee-on-Solent, 11.4.35. S. J. Marchbank and U. Y. Shannon, both to No. 502 Ulster (Bomber) Squadron, Alder-

grove, Northern Ireland, 10.4.35 and 28.4.35 respectively. G. L. Best, to Armament Training Camp, Leuchars, 14.4.35. G. K. Fairtlough, to No. 43 (Fighter) Squadron, Tangmere, 15.4.35. J. Grandy, to No. 604 (County of Middlesex) (Fighter) Squadron, Hendon, 15.4.35. B. H. Jones, to No. 43 (Fighter) Squadron, Tangmere, 15.4.35. J. W. C. More, to No. 43 (Fighter) Squadron, Tangmere, 15.4.35. N. E. Morrison, to No. 43 (Fighter) Squadron, Tangmere, 15.4.35. R. A. Phillips, to R.A.F. Station, Mount Batten, 15.4.35. J. Whitehead, to No. 43 (Fighter) Squadron, Tangmere, 15.4.35.

**Pilot Officers.**—G. N. Amison, to No. 2 Armoured Car Company, Ramleh, Palestine, 9.4.35. C. C. Francis, to No. 45 (Bomber) Squadron, Helwan, Egypt, 9.4.35. A. D. Groom, to No. 9 (Bomber) Squadron, Boscombe Down, 4.4.35. H. V. Hoskins, to No. 3 (Fighter) Squadron, Kenley, 3.4.35. G. F. L. Scott, to No. 822 (F.S.R.) Squadron, 12.4.35.

### Stores Branch

**Flight Lieutenants.**—G. H. Doveton, to Air Ministry, Department of Air Member for Supply and Organisation (D. of E.), 15.4.35. C. M. P. Hartley, to Station Headquarters, Donibristle, 14.4.35.

### Accountant Branch

**Flight Lieutenant.**—R. A. J. Mullarkey, to Record Office, Ruislip, 11.4.35.

### Medical Branch

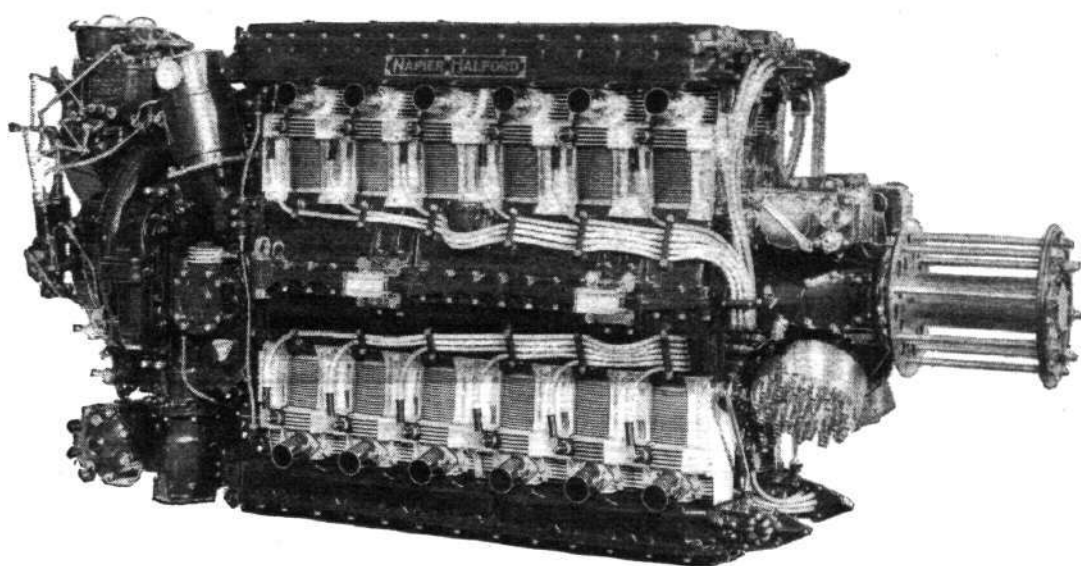
**Flying Officers.**—R. G. James and J. W. Patrick, both to R.A.F. Depot, Uxbridge, 12.4.35.

### Chaplains Branch

Rev. C. P. N. Rowband to No. 99 (Bomber) Squadron, Mildenhall, 12.4.35.



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## PLUCKY—but UNLUCKY

### *Miss Jean Batten's Return from Australia : A Fine Effort in a Four-year-old "Gipsy Moth"*

**M**ISS JEAN BATTEN (now the only woman to have flown solo from Australia to Great Britain, the only woman to have made the double journey alone, and the woman who has made the fastest flight from England to Australia) unluckily failed, while making the Australia-England trip, to beat her time of 14 days 23 hr. 25 min. for the outward journey.

Flying her veteran "Gipsy Moth" G-AARB, Miss Batten took off from Sydney for Port Darwin on April 8, and left the latter town at 6.40 a.m. four days later. When 250 miles from land, over the Timor Sea, the engine stopped at 6,000 ft. and started only after a 4,000-ft. glide. On her first day Miss Batten flew 1,100 miles and reached the Dutch East Indies. The next day she encountered a terrific thunderstorm, the day after that she ran into very heavy rain, and on the following day she met head winds which reduced her ground speed to less than 60 m.p.h.

Across India the heat, says Miss Batten, was unbearable, and her hand was badly blistered through pumping petrol. She flew on *via* Karachi across Persia to Baghdad, and thence to Damascus, Cyprus and Rome.

At Marseilles, with the record in sight, she had engine trouble. This was remedied, but during the subsequent take-off a tyre was burst by pieces of glass on the aerodrome.

On Sunday Miss Batten pressed on, *via* Lyons, to Dijon. She flew in fog over mountains with her blind-flying instruments out of order, and on landing at Dijon her "Moth" needed repairs.



Miss Jean Batten

During the last stage of the journey Miss Batten made an unscheduled landing at Abbeville, but reached Croydon on Monday. Her time for the homeward trip was 17 days 15 hr. 15 min

## HALF-PRICE FLYING INSTRUCTION

### *How to Take Advantage of the Young Pilots' Fund Scheme of the Air League*

**S**O much interest is being shown by youthful enthusiasts in the Young Pilots' Fund scheme for flying instruction inaugurated by the Duke of Sutherland and organised by the Air League of the British Empire, that a full exposition of the rules will doubtless prove of value to many readers of *Flight*.

Briefly, every donation to the Fund is doubled by the intending pupils, while the Air Ministry, through its subsidy plan, adds a sum equal to the original donation. By this means, flying instruction becomes available at approximately half the ordinary cost, i.e., at about £14 or £15. In the case of schools at which instruction is available at unusually low fees, the sum payable by the Young Pilots' Fund pupil is proportionately smaller, since it is always charged at the rate of 50 per cent. of the normal fees.

*Flight* has recently presented the Fund with a scholarship of the value of £15.

The regulations which must be observed by those intending to take advantage of the scheme are as follows:—

- (1) Applicants for financial assistance from the Young Pilots' Fund shall be British subjects who have reached the age of 17 years but have not reached the age of 26 years on the date of their application. (In special circumstances consideration will be given to those whose ages are 26 years and over.)
- (2) Applicants will sign the application form and forward it, with a reference as to character from someone of standing (such as a Minister of Religion, Magistrate, Officer of H.M. Forces, or Director of a Company) to the Air League of the British Empire, 19 Berkeley Street, London, W.1.
- (3) Applicants may be required to attend, at their own expense, at some convenient centre, e.g., the Air League's offices, or a local flying club, for interview before acceptance. Every effort will be made to keep travelling expenses as low as possible.
- (4) Applicants will undertake to save, if selected, such sums as are within their means and forward them monthly to the Air League of the British Empire, to be credited to the Flying Account which will be opened in their names by the Air League.
- (5) Applicants, when selected, will join the Air League of the British Empire as members, if they are not already members, and the first £1 subscribed will be regarded as their membership fee, and will not be credited to their Flying Account. (This contribution will help to relieve the fund of organisation and administrative expenses.)
- (6) Thereafter the Flying Account of each member will be credited from the Young Pilots' Fund with a sum equal to that subscribed by him from time to time; the sum standing to the credit of each member will be exchanged for vouchers for flying instruction as necessary. (Flying instruction taken during the week will be easier to arrange than at week-ends, and congestion during the week-end avoided.)
- (7) The issue of flying instruction vouchers will not begin until the sum standing to the credit of the member reaches £14 (of which £7 will have been contributed by the Fund). (This ensures that flying lessons can be taken at a rate that will

be of the greatest benefit to members). The first lesson will be considered as a trial lesson to ascertain the suitability of the member for flying instruction. If successful, the member will obtain from a medical practitioner, a medical certificate on the form required by the Air Ministry (Form C.A.61) which will be supplied by the Club. When advised by the Air Ministry that he is medically fit to hold an "A" Licence, the member will continue flying training. If a member is found unsuitable in either examination, the unexpended balance of his contributions will be returned to him in full.

- (8) Members, in accepting benefits from the Fund, are understood to be desirous of qualifying for an "A" Licence; or, on qualifying for an "A" Licence members will cease to benefit from the Young Pilots' Fund, and any unexpended balance of their contributions will be returned to them in full.
- (9) If, for any reason, the member wishes to discontinue flying training, the unexpended portion of his contribution will be returned to him in full on demand.
- (10) Should any member move from one part of the country to another, he may continue his training at the club most convenient to him, after due notification has been made to the Air League of the British Empire.
- (11) In signing his acceptance of these regulations the member (or, if under 21 years of age, his parent or guardian), indemnifies the Air League of the British Empire against all claims, demands and liability whatsoever arising from flying undertaken in pursuance of these regulations and otherwise in connection therewith.
- (12) Each member will be required to sign the usual indemnity form required by the Club concerned, which, in the case of a member under 21 years of age must be countersigned by his parent or guardian; and to observe all the rules and regulations of the Club.

Application forms may be obtained from the Secretary-General of the Air League, Air-Comdre, J. A. Chamier, 19, Berkeley Street, London, W.1.

### *New De Havilland Directors*

Mr. F. E. N. St. Barbe and Mr. A. E. Hagg, it has just been announced, have been made directors of the De Havilland Aircraft Co., Ltd. The announcement does not come as a surprise, both having been prominently associated with the success of the company throughout its career. Mr. St. Barbe has, as many *Flight* readers will know, been business and sales manager of the company since its inception, and was before that connected with the old Aircraft Manufacturing Company under the late Mr. G. Holt Thomas, at the time when Capt. G. De Havilland was chief designer of that firm. Mr. Hagg, also, was associated with Capt. De Havilland at the old "Aircro," having been his assistant designer. The team work among those associated with Capt. De Havilland and Mr. C. C. Walker has always been good, and the new appointments are likely to make it even better.

## HERE AND THERE



Mr. Katsutaro Ano, a Japanese pilot (right) is shortly to attempt to establish a flying record between England and Japan in his "Eagle" monoplane. (Flight photographs).

### Eastward Bound

LAST Monday, at Hanworth, Madame Matsudaira, wife of the Japanese Ambassador in London, christened a B.A.M.C. "Eagle" which is shortly to be used on an attempt to establish a record for a flight from London to Tokio. The pilot will be Mr. Katsutaro Ano, who will be flying solo, all the extra available space in the cabin being taken up by petrol tanks. The route to be followed is London-Vienna-Belgrade-Istanbul, Baghdad - Karachi - Calcutta - Rangoon - Bangkok-Hanoi-Hong Kong-Taihoku-Shanghai-Osaka-Tokio. The total distance is approximately 10,000 miles. The engine fitted is a de Havilland "Gipsy Major" of 130 h.p.

Except for the fitting of extra petrol tanks the machine is standard in every way. It is, of course, a product of the British Aircraft Manufacturing Co., Ltd., which recently took over the whole of the business of the British Klemm Aeroplane Co., Ltd.

The machine was christened *Seikai*, which means, we are informed, "Blue Seas." The christening ceremony very fittingly took place on the birthday of the Emperor of Japan. The start is due to take place almost immediately.

### Flying—On Stage and Screen

"Valkyrie," at the Westminster Theatre, is an unusual play and an interesting one, chiefly so for its setting in an aeroplane hangar.

Christen Jul, a Dane, who is the author, evidently understands the English character fairly thoroughly until he comes to the end of the play; then he gets a little unduly hysterical. The first parts are better than the last, which becomes almost hackneyed and closes with the inevitable crash of the hero—a crash which was obviously going to happen.

The acting of Miss Joyce Bland will alone repay a visit to the play, while for the aeronautically learned there is pleasure in the lack of technical errors. The stage setting is also better than one usually sees, and our readers will be glad to see that Mr. Torin Thatcher, as the young inventor, Michael Verner, has a copy of the latest issue of *Flight* on his desk.

"Anyone," as Robert Young puts it in "West Point of the Air," a film now showing at the Empire, Leicester Square, London, "can become a dumb aviator." Of course, he was merely consoling a fellow officer of the U.S. Army who, in piling up a Consolidated Trainer to avoid killing Young and his lady friend, had lost half a leg.

The film shows how these "dumb aviators" are made. It deals with the work of the training centre at Randolph Field, Texas, where young officers, fresh from West Point, are purged of their dumbness and taught to fly.

There is a slinky vamp, a Nice Girl, and a contingent of square-jawed, clean-limbed young officers. But there is too little flying. Probably the best shots are those of a civil Lockheed "Vega" which shoots-up Randolph Field and behaves in a thoroughly uncivil manner.

Crashes, of course, are sprinkled liberally throughout the

(Continued overleaf.)

## NUTS TO CRACK—No. 5

Another Practical Problem Set by Flt. Lt. Nicholas Comper. The Solution will be Found on Page 457.

IN one of the light aeroplane trials a slow-flying test required the pilot to fly across the aerodrome from mark to mark at a height lower than 50 ft., first in a down-wind direction and secondly up-wind. Points were given for the slowest flying times recorded.

I was flying a biplane of very light wing loading (about 5 lb./sq. ft.), while the power loading was over 30 lb./h.p.; the engine r.p.m. on the ground were 2,900 and about 3,000 when climbing full throttle. With such a power loading the take-off was difficult, but once in the air the light wing loading gave the aeroplane a buoyancy very similar to that which one experiences in a glider.

I approached the slow-speed course on a very slow glide, down-wind as required, and crossed the starting point at a height of about 20 ft. Deliberately I was very close to the stall and, as the aeroplane started to sink, I opened the throttle a little bit in order to maintain height. I was still sinking, and to avoid disqualification by touching my wheels on the ground I gave full throttle. The engine responded immediately, but, to my astonishment, I could not regain any altitude.

The aerodrome sloped downhill, and I found myself

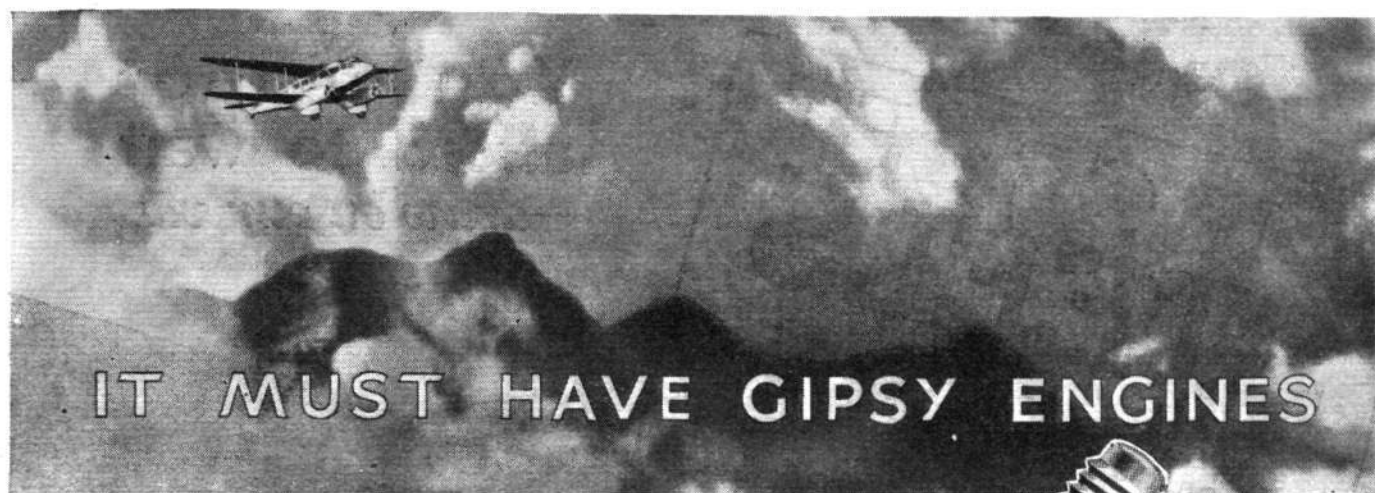
travelling down wind on a stalled glide, although my engine was giving a full 3,000 r.p.m. I passed the finishing post, and there was a hedge in front of me. I might have tried a down-wind landing if there had been any aerodrome left; but ahead of me were haystacks. These I managed to miss, and downhill and down-wind I carried on, with my engine screaming away, until in front of me came a row of telegraph poles. Being still completely stalled, there seemed no chance of jumping the wires, so I had to go under them. Then ahead of me I saw fifty yards of green grass, on to which I pancaked after shutting everything off.

As sometimes happens in the worst of emergencies, nothing was broken. Running up my engine on the ground proved it to be in perfect order, so, after jettisoning some of my competition load, I took off and returned to the aerodrome.

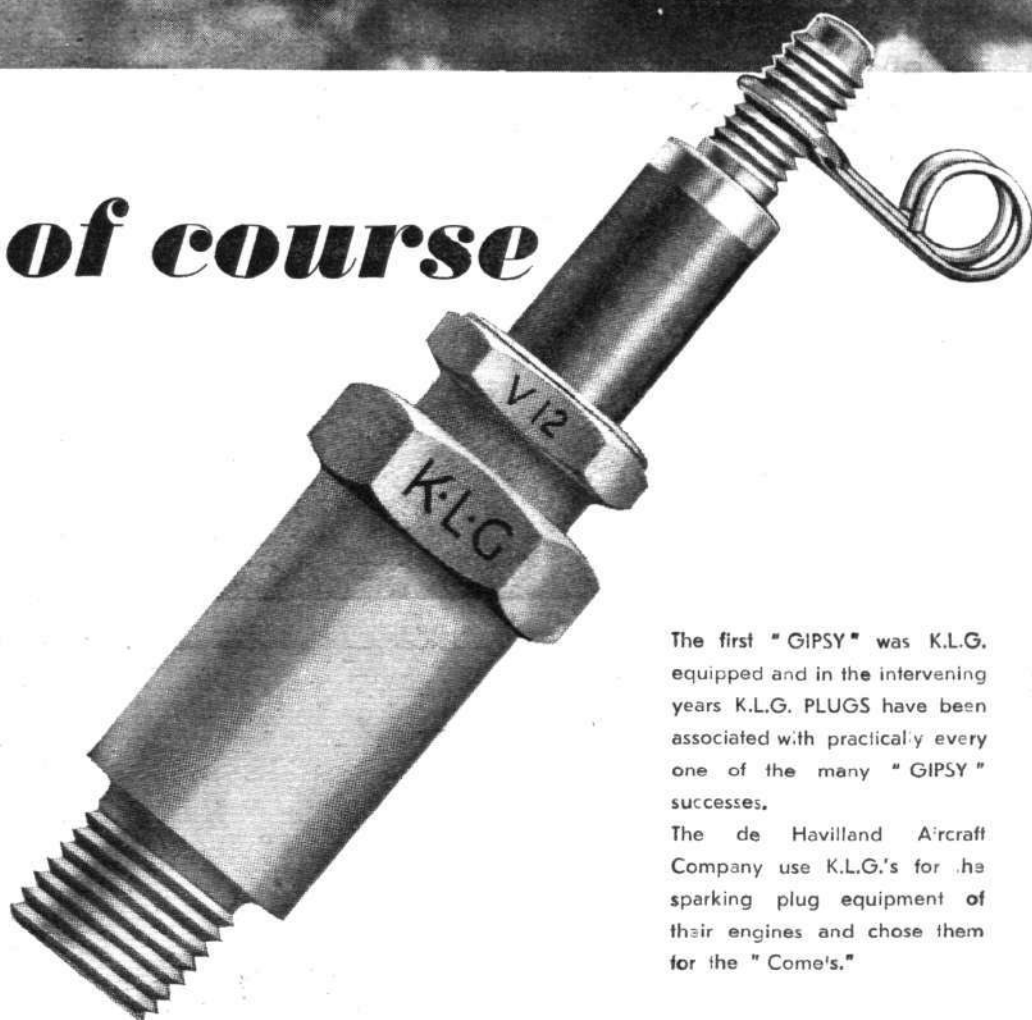
What puzzled me was that, although I had approached the starting point very close to the stall, with my tail between my legs, so to speak, the use of full engine had no effect at all between that time and my final pancake on to the ground.

Why was this so?





*and of course*



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**Here and There (contd.)**

picture. Once, when the hero swears he will not take part in night manoeuvres (he is flying Douglas O-38's by then) his father (Wallace Beery) takes aloft an ancient civil machine—apparently an out-of-work Fokker D.7—and, taking with him parachute flares to illuminate the troops which are to be strafed by the squadron, goes aloft. Junior discovers his father's action and sets off in pursuit. Dad puts his machine into a power dive to drop his flares and son follows him down. But the pull-out relieves the parental aeroplane of its wings and it drops in a river. So son ditches his Douglas alongside and dives for father. Confirmed picture-goers will recognise the formula.

The finale shows some very fine formation flying. Machines form the letters "U.S.A." to the accompaniment of martial music. But the Auxiliaries at Hendon, three years ago, didn't they . . . ? Why, so they did!

**Next Sunday's R.Ae.S. Garden Party**

Quite an extensive flying programme has been arranged for the Garden Party which the Royal Aeronautical Society is holding at Fairey's aerodrome next Sunday, May 5, and the event promises to be a very interesting one. The guests will be arriving from about 2.30 p.m. onwards, and the flying displays and demonstrations are scheduled to begin at 3.15.

Among the "artists" who can always be counted upon to give displays well worth watching are Flt. Lt. Clarkson (Comper "Swift"), Flt. Lt. Turner-Hughes (Armstrong-Whitworth "Scimitar"), Flt. Lt. Lucas (Hawker "Hart"), Flt. Lt. "Tommy" Rose (Miles "Hawk"), Mr. H. A. Marsh (Autogiro), and Flt. Lt. C. S. Staniland (Fairey "Firefly"). If interest threatens to lag at any time, Mr. Thorn will oblige with exhibitions of crazy flying on an Avro.

In addition to the aircraft taking part in the exhibition flights there will be many types on the aerodrome, including the Northrop bomber, which is being lent by the Air Ministry, and a Douglas belonging to the K.L.M. In the hangar there will be a "static" exhibition of photographs, engines, accessories and equipment.

Altogether the Garden Party promises to be well worth visiting, and it is to be hoped that as many members as possible will take this opportunity of spending an afternoon in interesting and pleasant surroundings.

Admission is not limited to members of the Royal Aeronautical Society, and members of the Royal Aero Club, the various aero clubs and flying clubs, are welcomed. It is, however, necessary to obtain the tickets, not later than today, Thursday, through a member of the R.Ae.S. The price is 5s., which includes tea.

**Well Worth Reading**

Many of our associated journals are issuing special Silver Jubilee numbers.

*The Autocar* dated May 3 is a notable production, the most beautiful issue, in fact, that *The Autocar* has ever produced. Its cover design is in silver and colours, and many of its editorial and advertisement pages are printed in full colours on art paper. An attractively illustrated record of the principal motoring happenings during the King's reign, and a description of His Majesty's garage and cars at Buckingham Palace are special features of a notable issue.

*The Amateur Photographer* of May 1 features art portraits of their Majesties by Vandyk, together with an article by the photographer on photographing Royalty, while amateur photographers will be intrigued by an article, "Snapshotting Royalty by Amateur Photographers."

In *The Yachting World* of May 3 the special feature is an historical survey by Major B. Heckstall-Smith, of the King's activities and influence as a yachtsman.

*The Wireless World* of May 3 records the importance and development of Empire broadcasting and stresses the intimate nature of the Jubilee celebrations made possible by wireless.

A record issue of *The Farmer and Stock-Breeder* was published last Monday. A Jubilee number, it contains no fewer than 104 pages, making it the largest farming paper ever published in Great Britain.

**"Nuts to Crack" Solution**

Airscrews running at high r.p.m. can be very inefficient at slow flying speeds. In this instance the aeroplane itself had a stalling speed below 30 miles per hour, and near to this speed the airscrew merely "cut a hole in the air" without developing any appreciable thrust.



**SHEFFIELD WEDNESDAY AT WEMBLEY ON SATURDAY:** The C.30 Autogiro used by the London police for supervising traffic flies low over Wembley Stadium during the football Cup Tie between West Bromwich Albion and Sheffield Wednesday.

# FOR H.R.H. the PRINCE OF

WITH his many public engagements, often widely separated in distance but close together in time, it was natural that, when flying became an accepted form of transport, H.R.H. the Prince of Wales should avail himself of the fastest mode of travel hitherto invented.

It is now a good many years since His Royal Highness bought his first aeroplane, a "Gipsy Moth" open two-seater, but from that day to this he has never forsaken air transport when it could be used to advantage. Photographs of some of the aeroplanes which the Prince has owned from time to time appear elsewhere in this issue. On this and the following page we are privileged, by special permission of His Royal Highness, to publish photographs of the latest addition to the fleet.

This is a De Havilland type D.H.89, now commonly known as the "Dragon Rapide." A twin-engined biplane fitted with two 200 h.p. De Havilland "Gipsy Six" six-cylinder "in-line" air-cooled engines, the D.H.89 has a cabin which will give seating accommodation for a number of passengers, depending upon the degree of room and comfort desired. As equipped for His Royal Highness, the machine has six very comfortable chairs, and the appointments include a very complete wireless equipment, so that

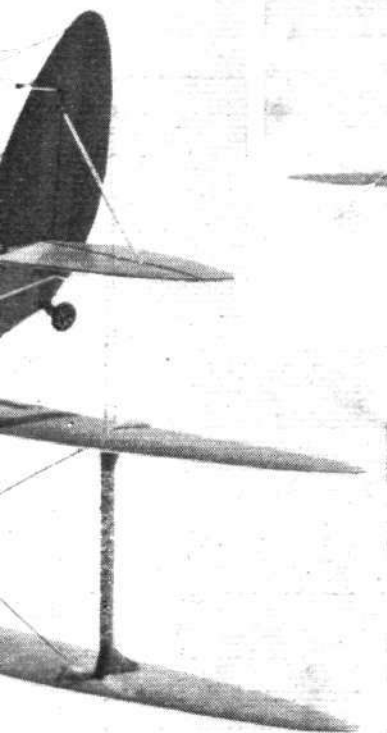


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# SALES



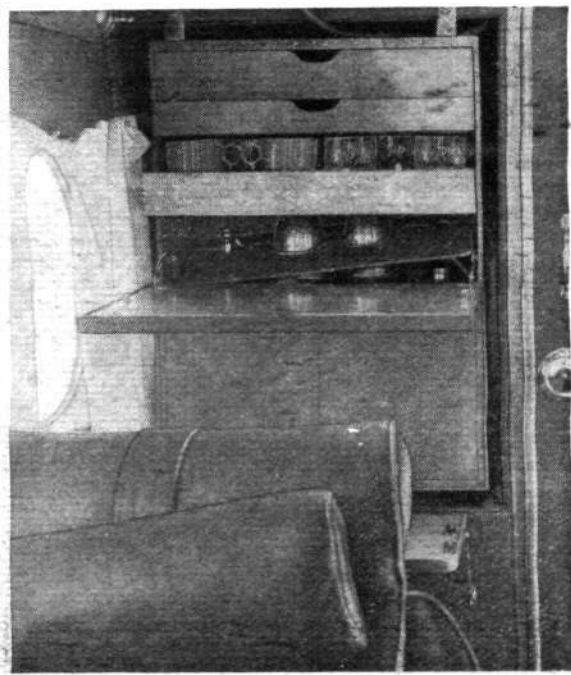
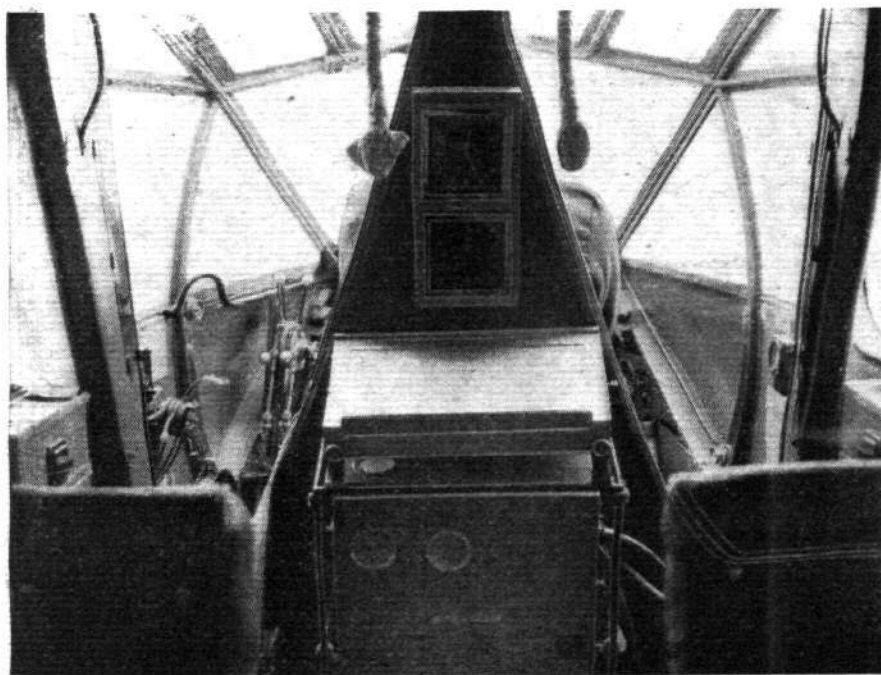
communication with the ground can be maintained throughout the flight, not only for navigational purposes, but for any messages which the distinguished owner may wish to send or receive. A cocktail cabinet is installed at the rear end of the cabin, and the wireless equipment is placed against the narrow partition which separates the cabin from the pilot's cockpit. Here, also, there is a table for writing, spreading maps, etc.

The Prince of Wales's new "89" is, like all his aeroplanes, painted in the Guards' colours—red and blue—a colour scheme which makes it readily recognisable. His Royal Highness has previously shown a liking for double letters in the registration of his aeroplanes. The new "89" is no exception, and bears the letters G-ACTT.

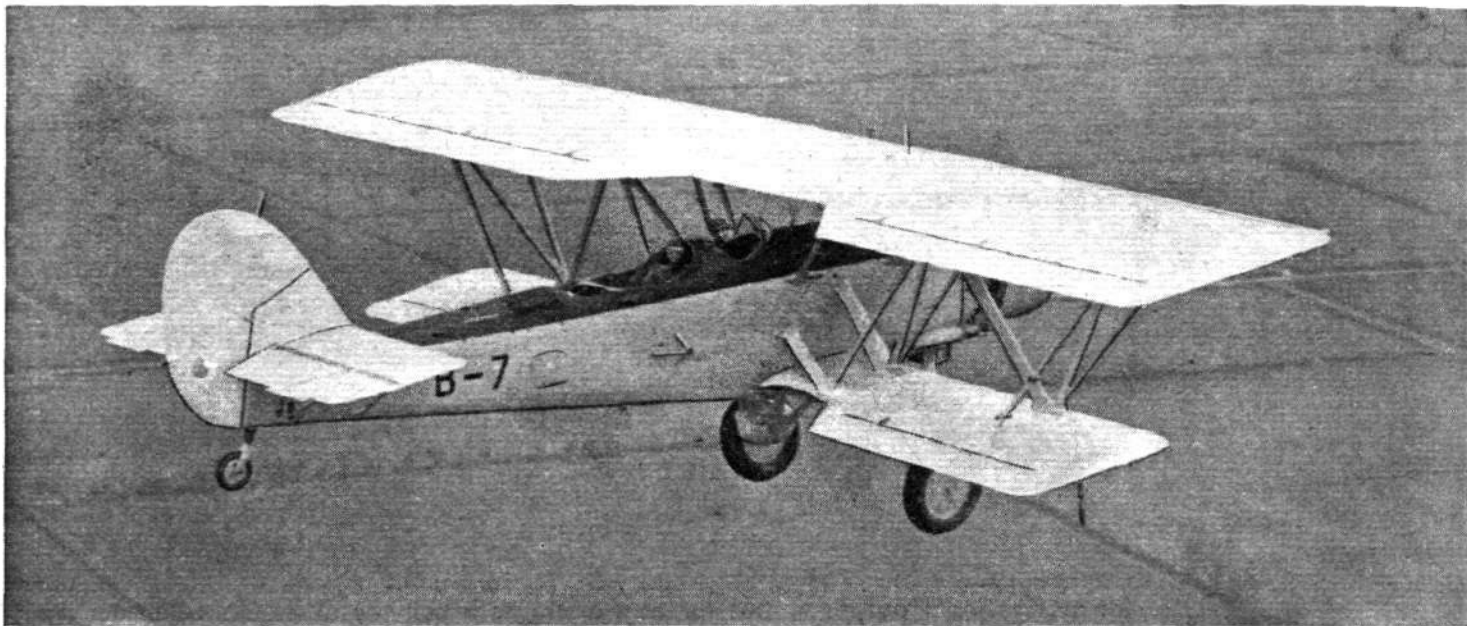
Apart from the furnishings and the external colour scheme, the Prince's "Rapide" does not differ materially from the standard type, a feature of which is excellent performance. For example, the maximum speed of the machine is in excess of 160 m.p.h., and the cruising speed will, of course, depend upon the degree of throttling used. Generally, it is in the neighbourhood of 140 m.p.h. The range is sufficient to enable the Prince, should he so desire, to travel from any point to any other point in the British Isles without having to make intermediate landings.

Dual controls are not fitted in the Prince's "Rapide," the pilot's cockpit being situated right forward in a very pointed nose, which leaves little room for changing pilots during flight. In some of his other machines the Prince has had dual control fitted, and has piloted himself on several occasions.

"Dragon Rapide"  
t : Some Special  
ne



Inside the Prince of Wales's De Havilland "Rapide": On the left is a view looking forward towards the cockpit, showing the wireless equipment. On the right is the cocktail cabinet. These and the other pictures of the machine were taken by a *Flight* photographer.



## A NEW BLACKBURN "G.P."

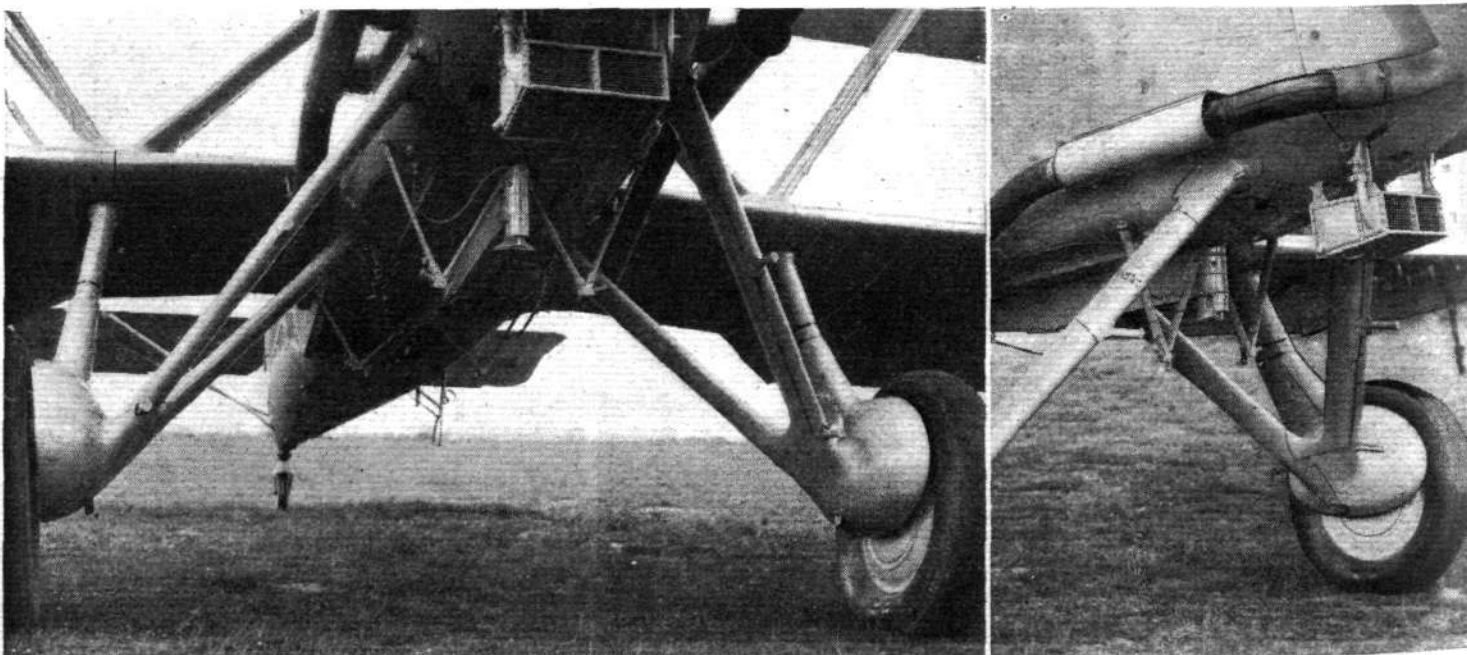
*Another Contribution to the Growing "General-purpose" List : Interesting Wing Arrangement of "Tiger"-engined Biplane*

**G**RADUALLY the list of new aeroplanes in the "General Purpose" class grows. Already several have been described and/or illustrated in *Flight*, including the Armstrong-Whitworth, the Westland, the Handley Page, and the Fairey. To the list has now been added the new Blackburn G.P. machine.

It is interesting to see how the various designers attack the problem. Although all the new General Purpose machines which have been illustrated so far have the one thing in common—that they are fitted with radial air-cooled engines—they differ considerably in their general conception and still more in their detail design. For example, the Westland and Handley Page designers chose the monoplane type of wing arrangement. The others have elected to follow the older and well-tried biplane type. It

is a requirement of a General Purpose aeroplane that it must be able to carry a very large load, and it is not, therefore, surprising that the majority of designers have chosen the biplane, as it is easier to achieve a reasonably low wing loading with the extra wing area which the biplane provides.

In the Blackburn General Purpose aeroplane something of a compromise in wing arrangement has been made in that the lower wing is of considerably smaller chord and span than the upper. In conjunction with the large cut-outs in the trailing edges, this form of biplane, which approaches the so-called "sesquiplane" arrangement, probably comes very close to monoplane efficiency combined with an excellent view for the crew, while the biplane bracing results in a relatively low wing weight.



**THE NEST :** The space under the fuselage of the Blackburn G.P. machine where bombs and torpedos are carried. In the view on the right can be seen the muff around the exhaust pipe from which heated air is led to the cockpits. (*Flight* photographs.)



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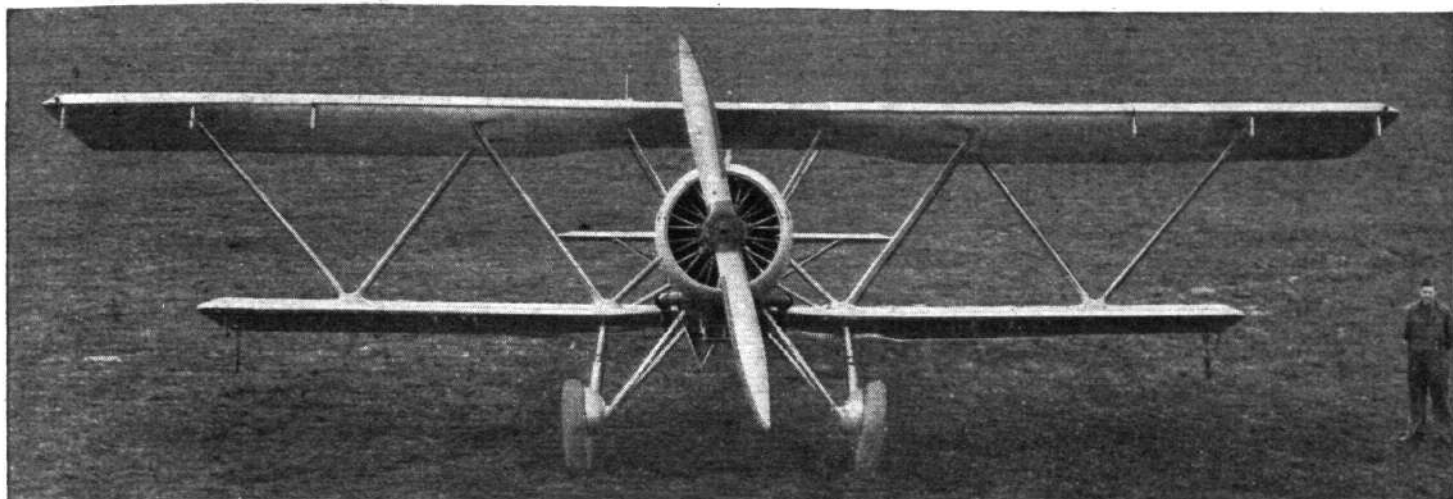
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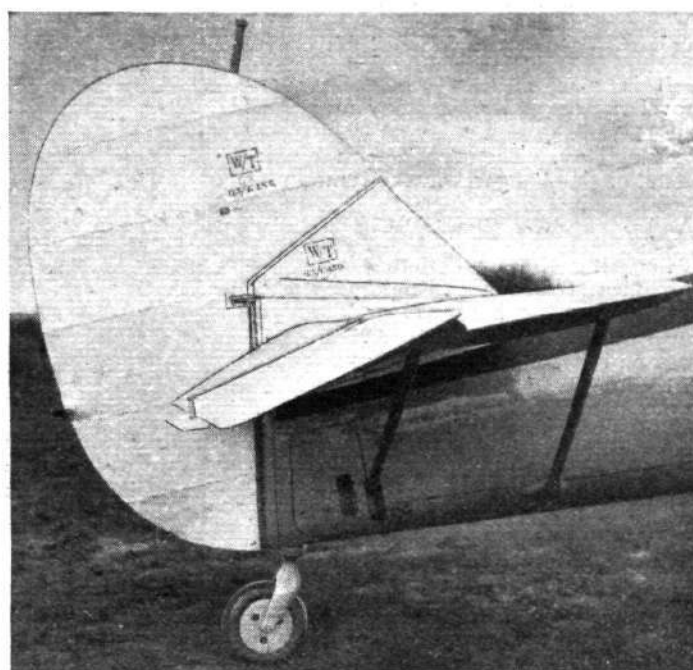


An examination of the accompanying *Flight* photographs of the machine shows that the wing bracing of the Blackburn G.P. is somewhat unusual. Instead of the orthodox vertical or nearly vertical interplane struts and streamline wire bracing, the wings of this machine are rigidly braced by sloping interplane struts, the lift of the lower wing being taken by one large strut which runs from lower front spar to upper rear spar. The normal interplane struts are of "N" formation and provide the torsion or incidence bracing. Frise-type ailerons are fitted on upper and lower wings, and the upper wing is provided with automatic wing tip slots. The tail surfaces are of orthodox design, but it will be observed that the elevators are provided with trailing-edge tabs.

The fuselage has smooth metal skin covering and is of good aerodynamic shape, the form being streamline and the Armstrong Siddeley "Tiger" engine enclosed in a long-chord cowling ring.

A "split" undercarriage is, of course, used to give space for the bombs and/or torpedo carried under the fuselage. The wheels are not enclosed in "spats," but it will be noted that where the three undercarriage struts meet the wheel a very large fairing is used in order to avoid interference drag. A castoring tail wheel is used instead of a skid.

Of the extensive military equipment carried little may be said, but it will be observed that provision is made for carrying offensive armament in the form of bombs and/or a torpedo, and that navigation lights are carried. The defensive armament includes the usual synchronised machine guns for the pilot, mounted under the deck fairing, and a swivelling gun for the air gunner, who is protected against the slipstream by a flared-out cockpit coaming.



The Blackburn G.P. machine is almost a "sesquiplane" in that the lower wing is much smaller than the upper. Note the unusual wing bracing. In the view of the tail may be seen the "trimming tabs" on the trailing edge of the elevator. Another view of the wing bracing is obtainable in the side elevation below. (*Flight* photographs.)



# THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS

## Another Thread in the Web

A new air line from Croydon to Guernsey, via Portsmouth and Bournemouth, is being inaugurated next Monday. Details will be found on page 485.

## "We are Now Over Omsk —"

A sounding balloon equipped with automatic wireless is being completed at Slutsk in the U.S.S.R. A continuous transmission will enable its passage at a high altitude to be followed.

## Solution in Our Next!

It is whispered that something very novel in the glider line may appear at the R.Ae.S. garden party at Heath Row next Sunday. The cryptic term "occasional engine" figures in the rumours.

## A Promising Semi-rigid

Largest and newest of the Soviet airship fleet, the U-6 semi-rigid illustrated in *Flight* of March 21, has made a flight of 30 hr. 20 min. with twenty-two persons on board. She attained 75 m.p.h.

## Detecting the Ice Threat

A 23-year-old Capetown man claims to have invented an instrument which, by analysing temperature and relative humidity, will quickly and efficiently indicate conditions likely to cause the formation of ice on an aeroplane.



THE MOUNT OF THE CHAMPION. Delmotte's Caudron for the forthcoming Coupe Deutsch contest (May 19) is similar to that in which he secured the world's landplane speed record early this year with 314 m.p.h. The most noticeable alteration is the retractable undercarriage.

## Verboten

It is stated in Notice to Airmen No. 44 that official notification has been received that United Kingdom aircraft have recently infringed regulations when flying over German territory; pilots are warned that severe measures are likely to be taken in the case of any further infringement, and are advised to seek official advice before visiting Germany.

released at a given spot at will and brought to earth by its own pilot, and it is intended to develop a regular service of "air trains," mainly for fast goods delivery.

## Icarusky

Jumping from an aeroplane at 5,000ft. a Russian parachutist equipped with wings (constructed by the Commissariat of Heavy Industry!) descended 3,000ft. —a distance which would occupy 18 seconds by parachute—in about three-quarters of a minute. He then pulled the rip cord and landed safely. Later he made an almost horizontal flight of 1,350 yards.

## Plus Four

In addition to the list of forty Royal Air Force stations given in *Flight* the following are to be open to the public on Empire Air Day, May 25:—R.A.F. Station, South Farnborough; Marine Aircraft Experimental Establishment, Felixstowe; Aeroplane and Armament Experimental Establishment, Martlesham; Air Base, Pembroke Dock.

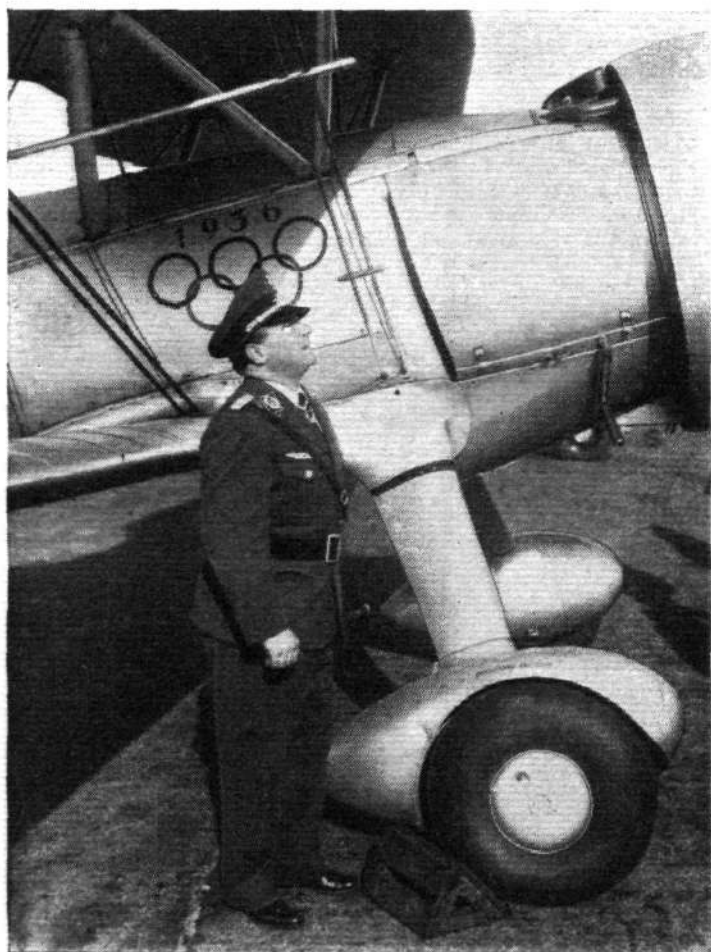
## Creditable

Three Rumanian machines have flown, in formation, from Bucharest to Cape Town in ten days.

## Slip Coaches

It is said that preparations are being made in Moscow for an experimental "air train" flight from Moscow to Irkutsk—a distance of more than 3,000 miles—by an aeroplane towing nine gliders. Any one of them may be

AMUSING — AND INSTRUCTIVE. Herr Ernst Udet, the German pilot, with the Curtiss "Cyclone-Hawk" which was acquired for aerobatic displays—and, possibly, as an example of a modern fighter.



## Twenty-five Years Ago

From "Flight" of April 30, 1910

"Gaudart had arranged to give some exhibition flights at the Chamartin de Larosa aerodrome at Madrid, but, owing to the strong wind, he declared it was impossible to fly. At this the crowd commenced to hurl stones, and in order to try and appease them he attempted to fly. He, however, fell from a height of 20ft., and then the spectators threatened to lynch him, and he was only rescued by the civil guard. The aeroplane suffered considerably."



### Also Verboten!

The German protest reported on the opposite page lends a whimsical touch to last Tuesday night's news of the German pilot who was intercepted by fighters over Italy and arrested.

### The Douglasus

A mounting to take the Bristol "Pegasus" is being developed by the Douglas company for their D.C.2 machine. Shall we see home-powered "Douglii" at Croydon this year?

### Stepping Them Up

The 100-h.p.-per-cylinder engine is close ahead. The latest production model Wright "Cyclone" is giving 775 h.p., whereas in 1931 it was developing only 575 h.p., and a new moderately supercharged Bristol "Pegasus," the Mark X, delivers 820 h.p. at 3,500 ft.

### The Interceptor

Flying from Los Angeles to Mexico City in an endeavour to make a non-stop trip, Miss Amelia Earhart was forced down only sixty miles from her goal through an insect flying into her eye. She was unable, as a result, to read her maps, and so lost her bearings.

### B.G.A. and the Gliding Subsidy

At a meeting of the British Gliding Association last Friday sub-committees were appointed to deal with the matter of the much-discussed Government subsidy. Professor David Brunt was elected chairman and Mr. H. D. Hiscocks was appointed treasurer.

### Black Intentions

It is said that Mr. T. C. Campbell Black will attempt four record-breaking trips this year. One, in July, will be to Capetown and back, the second, a return flight to Canada, another to the Far East, and the fourth to an unknown destination. But the De Havilland company knows nothing of the "Super Comet" reported to be under construction for him.



**CUP - CONFIDENT?** M. Delmotte, seated in the Caudron C.460 which he is to fly in the Coupe Deutsch, makes certain that there are no obstructions at the forward end of his throttle quadrant.



**REVOLUTIONARY.** An impressive view of a flight of Autogiros or, as the R.A.F. prefers to call them, "Rotas," from Old Sarum, where they are being adopted for Army Co-operation work.

### Little 'Plane, What Now?

According to its manufacturers, the Bellanca Irish Swoop, late of Mildenhall, will do 256 m.p.h. and cruises at 224 m.p.h. A cruising range of 3,085 miles is claimed.

### Fourteen Happy Returns

Herr Hitler spent part of his forty-sixth birthday inspecting fourteen military aeroplanes presented to him by the Storm Troops.

### Re-engining the "Heyford"

Two supercharged "Pegasus" radials are fitted in a new version of the Handley-Page "Heyford," which is known as the Mk. Ia. Yet another variation, the Mk. II, is powered with a pair of "Kestrel VI's" giving a maximum of 640 h.p. each at 14,000 feet.

### Another Jubilee

Twenty-five years ago—on April 23, 1910—Claude Grahame-White and Louis Paulhan, both on Henry Farmans, fought a stirring battle for £10,000 offered by the *Daily Mail* for a London-Manchester flight. The winner, Paulhan, took roughly twelve hours for the flight. Today the regular commercial schedule calls for a 1½ hr. trip, including one stop.

### South American Race Postponed

The proposed international air race round South America has been postponed until the spring of 1936. It was to have taken place this year during the spring, but there was insufficient time to make full arrangements and to permit foreign pilots to enter.

### A Hush-hush Rolls

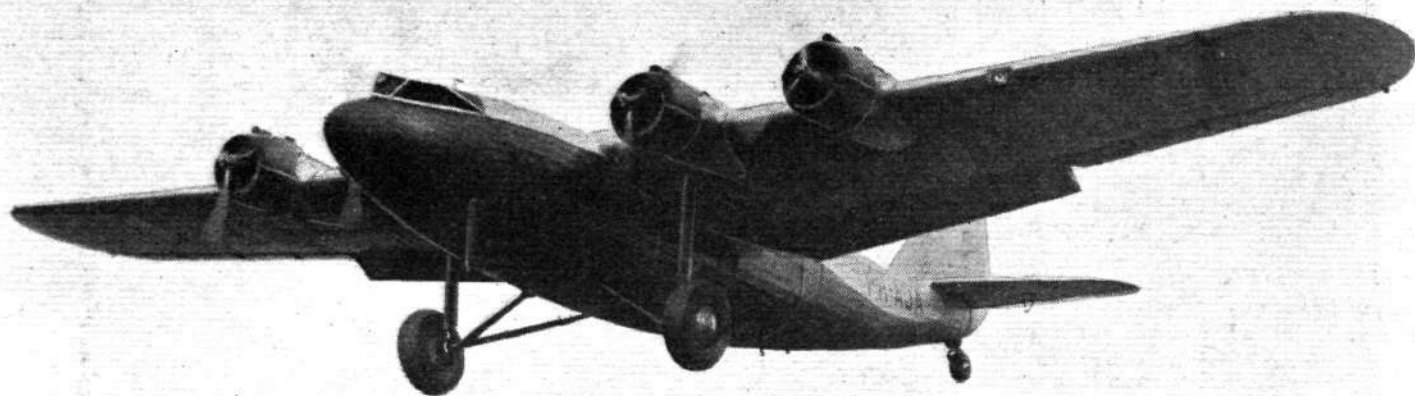
Enthusiasts in two widely separated districts, Weybridge and Tollerton, may have noticed an uncommon-looking "Hart" with a four-bladed airscrew and a radiator somewhere beneath the back seat. Actually, it is fitted with a brand-new type of Rolls-Royce engine designated the P.V. 12. Of that, more later!

### Ex Cathedra

Notice to Airmen No. 43 points out that nobody may fly within a five-mile radius of St. Paul's Cathedral during the period commencing at 24.00 hours on May 5 and ending at 24.00 hours on May 6. The regulation will doubtless have come as a blow to any who intended to enhance the illuminations on Jubilee night by flying neon signs over the Metropolis.

# COMMERCIAL AVIATION

## — AIRLINES — AIRPORTS —



**FLAPS DOWN :** The K.L.M. F.36, which, with the A.B. Aerotransport F.22, was on demonstration at Croydon last Monday, coming in to land. The flap area and the chief pilot's view are noticeable features. (*Flight* photograph.)

### LOOKING AHEAD

#### *This Year's Internal Air Lines : The Need for Active Co-operation : Some Unexplored Possibilities*

**N**OW that the year's plans for internal air services are, for the most part, either advanced or complete it is possible to examine them in comparative comfort and certainly without the lurking fear that drastic revisions are impending.

Generally, but with certain important additions and duplications, the 1935 picture is very similar to any which might have been drawn during 1934. In fact, an examination of the sketch map reproduced in *Flight* of January 10 will indicate the fact that the general shapes and masses remain unchanged, though the East Coast route has now been discovered and the possibilities of serious cross-railway routes are being examined.

It is too late now for the Air Ministry to lay down its ideas of the main trunk routes and to designate their functions, but not too late to plan for 1936. Recently, it may be mentioned, the Aerodrome Owners' Association—previously known as the Airport Division of the S.B.A.C. Air Transport Section—had an interview with the Secretary of State for Air on this very matter, which is so very important from the municipal and ratepayers' viewpoint. They wish to know whether their various prized airports are or are not likely to be used for intensive day and night operations or merely on occasion. *Flight* is continually stressing the need for a national plan.

In some respects every year is a crucial year for aviation, but 1935 is likely to be the most crucial yet from the air transport point of view—and doubly so for the operators who have been in action for a year or more. No company can carry on for ever at a loss, though losses are completely inevitable while a market is being explored. The things to do are to make quite sure that a prospective market is waiting and then for companies to co-operate in such a marked manner that not one single unnecessary service is run or even considered. There is little excuse for three companies to carry one-third loads over a particular route while a single company could fly full machines. United they will stand, in fact, while the petrol tax is still with us,

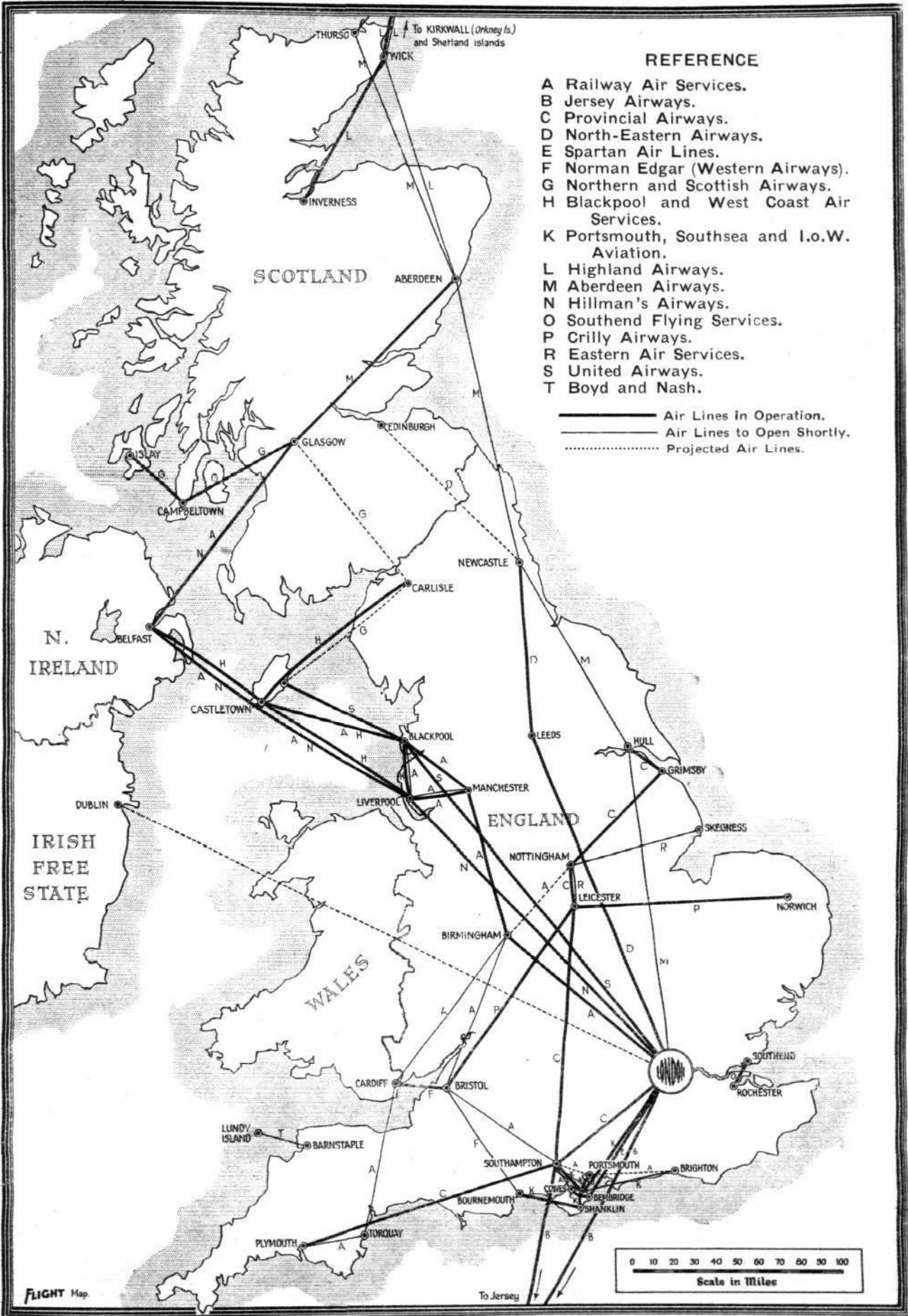
and while the Great British Public—including quite a large percentage of people intimately connected with aviation—prefers, using its own peculiar expression, "to keep one foot on the ground." Meanwhile, two companies run from London to Liverpool, Belfast and Glasgow; three companies run to the Isle of Man from the mainland; two companies run from London to the Isle of Wight; two companies will be running from London to Newcastle; and two will presently be hurrying from Aberdeen to the Orkneys and Shetland. Co-operation is not yet in sight.

It is cheering, however, to remember that every single operator must believe in the potentialities of his particular service, and the duplications and triplications may eventually be filled to overflowing. For the present, air travel being mildly expensive and something of an adventure to the uninitiated, the holiday routes are the most successful, and it would appear that there is still room in the field for seasonal service from the industrial or heavily populated areas to the various seaside resorts. Routes could be chosen for which the surface transport is both long and laborious. Air lines in this country are competing with highly organised surface services which continue to run after the sun has set and after aeroplanes have generally been put to bed. Fortunately, the fastest ships are very slow, air travel over the sea is very much more comfortable than surface travel, and even trains are held up by the kind of weather which will defeat internal air services until ground organisation has been properly planned and provided. Given all the assistances that are even at present available in the way of radio and blind landing equipment, an air service should, theoretically, be the safest and most regular means of transport available.

Since last season three new companies have entered the arena—North Eastern Airways, who were to run from London to Edinburgh, but who were prevented by the lack of a suitable civil aerodrome from reaching that city; Crilly Airways, who, after an experimental service between Doncaster and London, are now running between Bristol,



# THE YEAR'S INTERNAL AIR ROUTE SYSTEM



Although modifications and extensions of the system are inevitable and desirable, this map and key, showing the internal air lines of Great Britain, indicates the present trend of development. Actually, at the moment of going to press we learn of another line which is to be opened between Croydon and Guernsey, and details of this are given on another page. The need for co-operation over, for instance, the various north-western routes is quite obvious and it will be seen that a series of holiday services, cutting across the main lines of surface communication, has still to be planned.

### Commercial Aviation

Leicester and Norwich; and, lastly, United Airways, who are running a high-speed holiday service from Heston to Blackpool, and from there a high-frequency service to the Isle of Man. In addition, a trade charter company, Commercial Air Hire, Ltd., have started a badly needed inter-airport service between two of London's primary airports. This enterprise, known as Inner Circle Airlines, is already carrying three-quarter loads, and will eventually extend its operations through Hatfield, Gravesend and Essex Airport. Such a regular hourly service will be of inestimable value to air travel, making new connections possible and allowing the grouping of particular services at particular airports.

Blackpool and West Coast Air Services are now flying daily from the Isle of Man to Belfast and Carlisle as well as Blackpool and Liverpool. The company also operates an hourly shuttle service between Liverpool and Blackpool. Railway Air Services run from Manchester to Blackpool and the Isle of Man, and will shortly call in at Liverpool on this route. Their Birmingham-Cardiff-Torquay-Plymouth and Birmingham-Bristol-Southampton-Cowes routes should be re-opened shortly, and there are possibilities of extensions between Birmingham and Nottingham and between Southampton and Brighton. Spartan Air Lines now

run from Heston, and the Portsmouth, Southsea and Isle of Wight Aviation Co. have modified their ferry and other services now that Airspeed machines are used.

Jersey Airways do not now call at Portsmouth, but run separate services from Heston and Southampton to Jersey. This is probably the most successful of our internal air lines, and during the summer machines will be stopping at their new Alderney aerodrome. Aberdeen Airways will soon be running between Aberdeen, Newcastle, Hull and London, and northwards to Thurso, the Orkneys and, perhaps, to the Shetlands, while the mail-carrying Highland Airways, that pioneer company of Scotland, should be extending also to the Shetlands. Lastly, there is still a chance that a service may be seen this year between Dublin and London. There appears to be a reasonable demand, but the route will require multi-engined machines and experienced pilots, passing as it does over the Irish Sea and the worst of Wales. With regular weather reports and radio facilities there is no reason why such a service should not be run with regularity in both winter and summer.

Considering that the air route map of this country was virtually a blank four years ago, there is very little reason to feel despondent.

H. A. T.

### Bernt Balchen in Europe

Bernt Balchen, who flew Admiral Byrd on his South Pole expedition, among other exploits, arrived in Europe on the U.S. liner *President Roosevelt* last week. Interviewed at Queenstown, on board the liner, he said he was to confer with the Fokker Company and make a survey for the opening of a new air route. Balchen said he hoped that at an early date it would be possible to operate air services across the Atlantic from Le Bourget to New York. After his continental trip he will visit Ireland to survey the possibilities of operating the Trans-atlantic route from that country.

### A West African Project

Another Empire airway, which will connect West Africa with the Imperial network, is to be inaugurated in the near future.

Arrangements have been concluded between Elder Dempster Lines and Imperial Airways to form a joint company to be known as Elders Colonial Airways, for the purpose of operating air services in West Africa.

Arrangements are also in hand for the inauguration this year by Imperial Airways of an air service from Khartoum to Nigeria which will provide a through connection from London to Lagos via Khartoum, El Fasher, Fort Lamy, Maidugari, Kano, Kaduna, and Illorin.

Elders Colonial Airways will operate an extension from this service to Accra, and later to Kumasi and Takoradi as soon as suitable ground organisation is provided at these places. Later on it is hoped to provide a service to Freetown. Other local services, special charter work, etc., will be developed as the need arises.

It is hoped that it will be possible to arrange for Elders Colonial Airways' services to be run in connection with the arrivals and departures of Elder Dempster ships, as well as with Imperial Airways' air services, so making it possible for passengers and mails to be distributed quickly in the Gold Coast and Nigeria after the arrival of the mail ship at Takoradi.

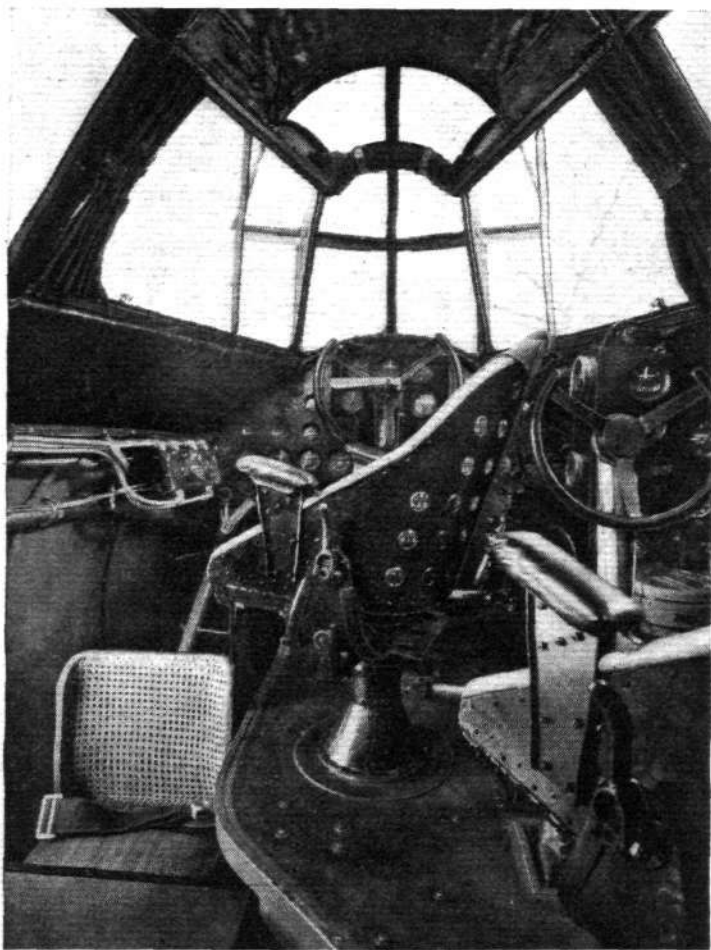
### Demonstration

Even those who had previously seen the Fokker F.36 in the flesh and had flown therein would find it extremely difficult to distinguish it from the F.22, which is the later and smaller version of the same design. Both the K.L.M. F.36 (*Arend*) and the A.B. Aerotransport F.22 (*Lapland*) were side-by-side on the tarmac at Croydon on Monday, and even then the differences, apart from special fittings and colour schemes, were hardly noticeable.

The flying qualities of the smaller machine, from the passenger's point of view, were similar in every respect, with comfort as the keynote. There was a certain amount of noise and vibration on full throttle, but at cruising revolutions it was possible to converse in comfort and only the slightest drumming was noticeable. With controllable pitch airscrews and flaps, the take-off, with a full load of passengers, was quite astoundingly short even in a virtual flat calm—something like twelve seconds elapsed from the moment of opening up at a fast walking pace to the last gentle bounce. The approach, too, with flaps fully down, is comfortably steep.

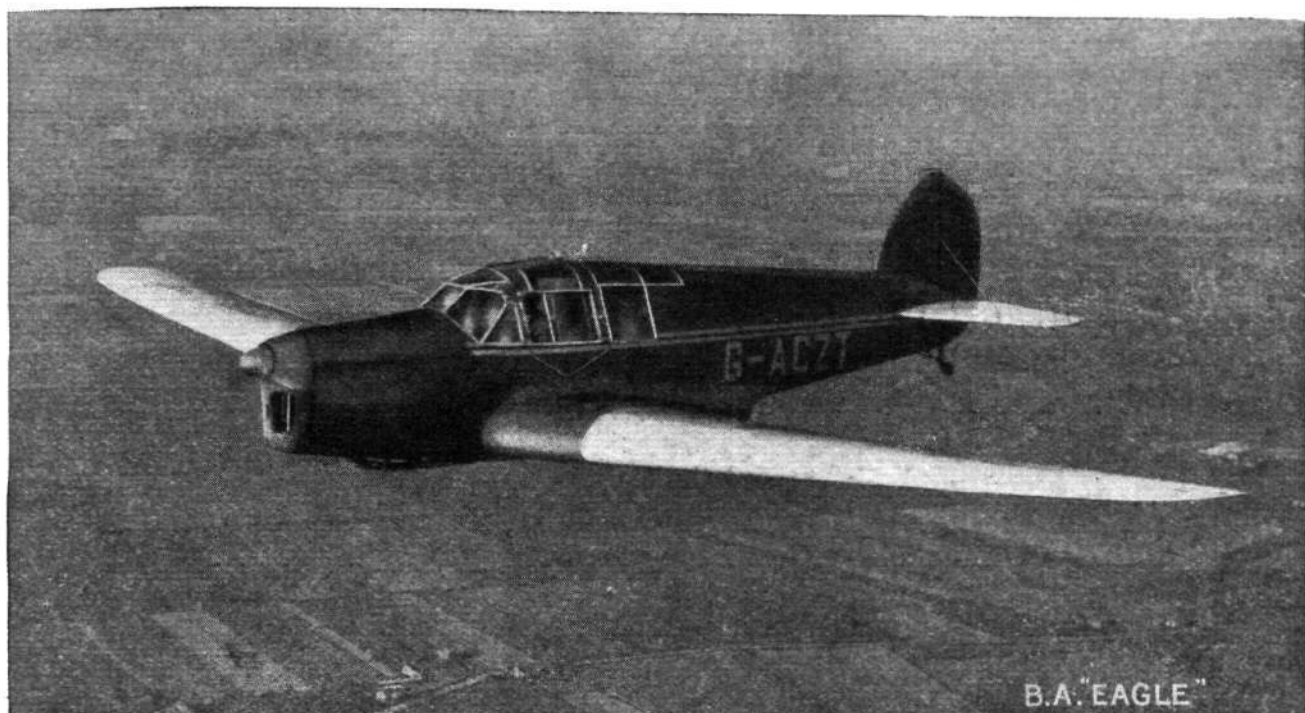
A.B. Aerotransport's F.22—which was flown by Lt. Lindow, the firm's chief pilot and by Lt. Lindner—has landing searchlights in each leading edge and a larger one in the nose. The cruising speed with four Gnome-Rhône 9Kfr. engines, is 165 m.p.h. at 8,200 ft. The K.L.M. F.36 was flown by Mr. B. Sillevius.

Among the many notabilities on the tarmac were Capt. Carl Florman, the managing director of A.B.A., and Mr. Bernt Balchen.



IN THE F.22: The disposition of the pilots' seats in the Fokker F.22 is interesting in that the commander is provided with a perfect view on each side, while the first officer has a view which is little worse than that provided for each pilot in the conventional layout.





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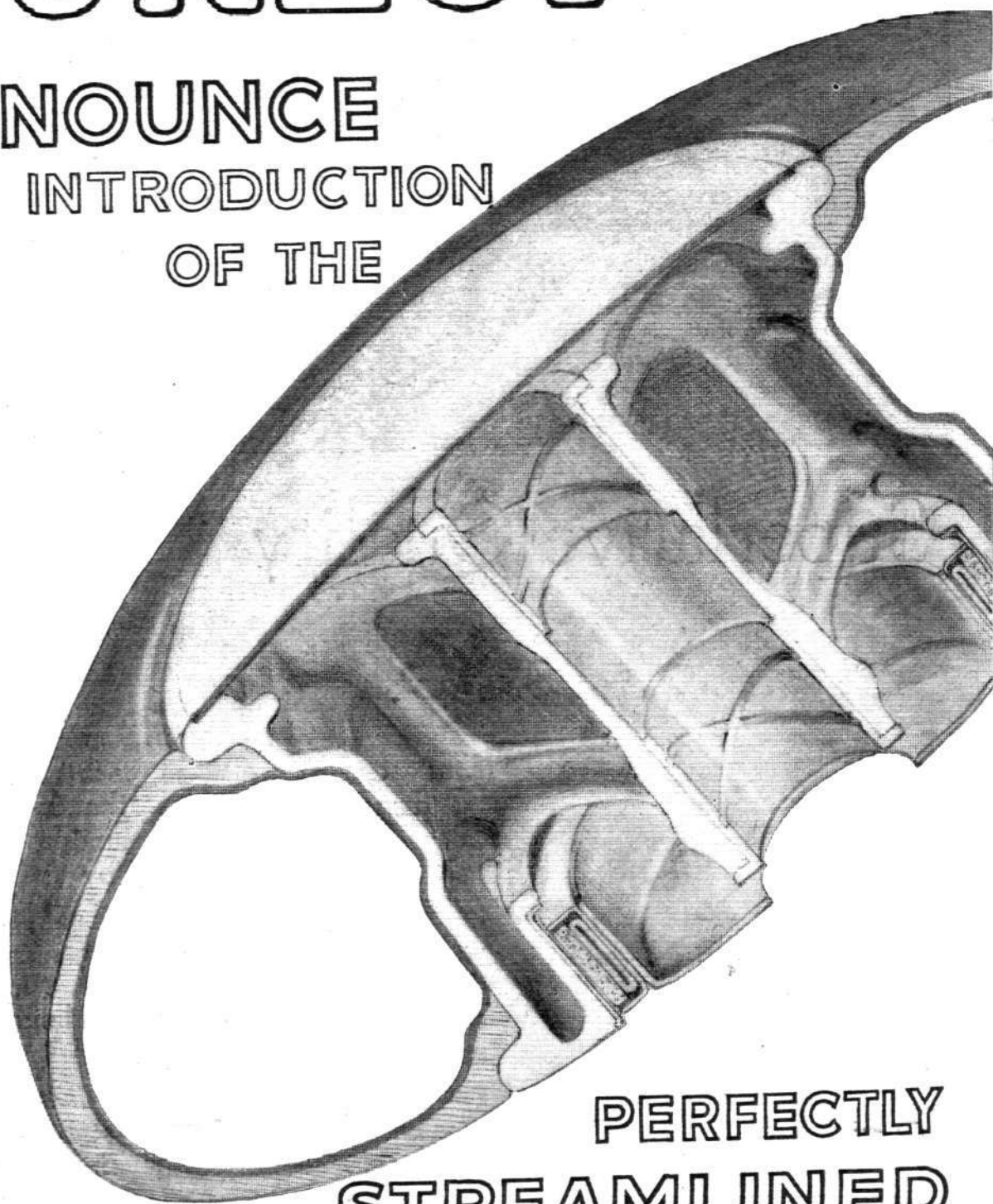
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# AIRPORTS BY THE DOZEN

## *Planning Canada's Transcontinental Route : A Chain of Airports and Emergency Grounds : The Work Involved*

By ARNOLD H. SANDWELL

THE dream of an aerial highway right across Canada from sea to sea has been an ever-present one with the Department of National Defence of the Dominion ever since that body came into being on January 1, 1923. From that date until about 1930 slow but steady progress was made in the development of the project. Shortly after, the celebrated depression having manifested itself, things came pretty much to a dead stop. The Prairie Air Mail, which was started in 1930, and was on the verge of being extended across the Rockies to the Pacific Coast, was shut down in the spring of 1932, and much of the night-flying equipment which had been installed by the Government was put into storage. It looked as if the chances of completing the trans-Canada airway were extremely small.

At just about that time, or very shortly afterwards, unemployment became a major problem in the Dominion, accompanied by features that had never been previously considered. Relief for unemployed married men and their families had been rather grudgingly conceded for a number of years, but it was an accepted theory that the single man could look after himself. The result of this doctrine was that many single men, even before the depression, found themselves each autumn with no money and with no possibility of either relief or work. It is not, therefore, surprising that some of them committed venial crimes to secure board and lodging for the winter—in jail. The cost of the said board and lodging was paid for by the various provinces.

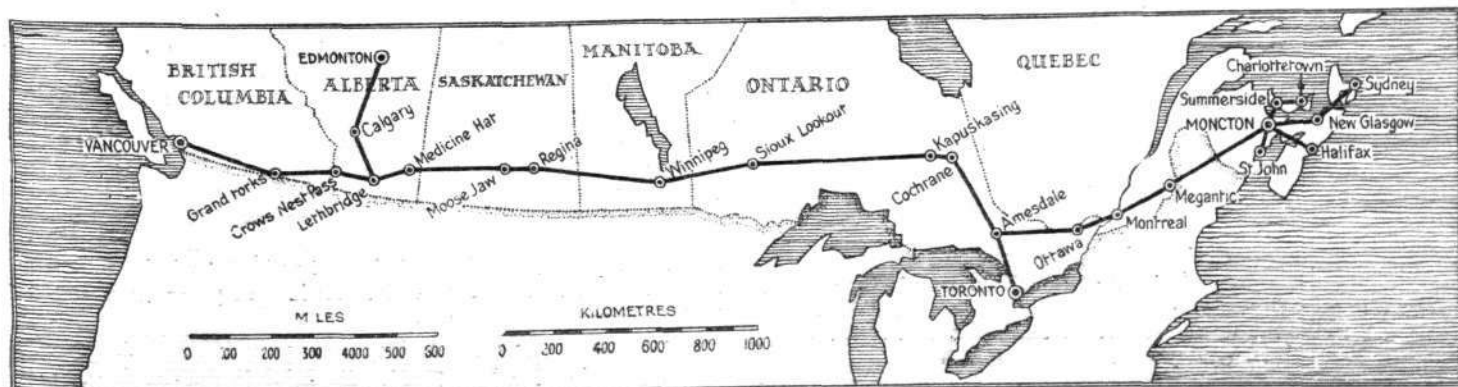
In the autumn of 1932 these provinces, like everything else, were bankrupt. The Federal Government, who were taking the brunt in any case, stepped upon the stage



This photograph of Vermilion Bay airport, Ontario, reproduced by courtesy of the Royal Canadian Air Force, gives a graphic idea of the difficulties that are being contended with. The camp lies in a clump of trees by the lake to the left and most of the area extending to the main road in the foreground is to be developed in due course.

and offered to take the burden over and to establish camps at which the disheartened, ill-clad, and under-nourished single men could be found employment at some healthy outdoor task, in return for which they would receive adequate food and clothing, shelter, mental and physical rehabilitation, and twenty cents a day for pocket money. The task chosen was the construction of a chain of airports and emergency landing fields, which, when completed, will consist of 114 sites, spaced approximately twenty-five miles apart, and covering the entire route, with the exception of a stretch of about 160 miles of mountainous, heavily wooded country in the State of Maine, where the United States projects into Canada between the provinces of New Brunswick and Quebec.

The work involved in locating, surveying, acquiring, clearing, levelling, and finally seeding these sites constituted an enormous enterprise, and is still in progress. Strangely enough, the greatest difficulties were encountered, not among the mountains of the West, where they might have been expected to lie, but in Northern Ontario,



How the trans-Canadian route, with converging services, will appear when the great plan has been completed. For the sake of clarity the comparatively short mail and passenger lines at present operated are not shown.

especially in the 640 miles between Cochrane and the Manitoba boundary in which some twenty-two new fields had to be laid out. This stretch of territory, where it is not actually under water, consists almost entirely of rock, spruce bush, and muskeg. Muskeg, incidentally, is a waterlogged accumulation of partially decayed vegetable matter, old roots, and so on, somewhat similar to peat in the making, and particularly difficult to handle.

The sites were first located from the air and investigated both from upstairs and on foot. If apparently satisfactory, they were then surveyed and measured up. The next step is to find out who is the owner, what timber or mineral licences have been issued on them, if any, and what steps will be necessary to acquire a title. If it is Crown land, application is made to the Department of Lands and Forests of the province concerned for transfer of the site to the Dominion Government—presumably the Department of National Defence. In cases where it is privately owned, the usual procedure has been to obtain an option from the owner.

A general clearance of the site is the first objective, and this entails the removal of material which may vary all the way from heavy standing timber with immense roots to a matted mass of deadfalls through which second-growth poplar has forced its way. Outcrops of rock, small lakes, and muskeg frequently occur. By the time the site is cleared it is possible to decide which, if any, of these major obstacles can be avoided, and which will have to be, respectively, removed by blasting, filled in or drained. On the less important fields it is often possible to resort to the development of runways which avoid the most serious obstacles. While so-called "all-way" aerodromes are the ultimate objective, where landing strips are resorted to it is endeavoured to give them a length of 3,000 feet and a width of 600 feet. Of this latter dimension not less than half is developed immediately. The first runway lies with the prevailing wind, and the next with the secondary wind.

The strip map clearly shows the course of this great

projected aerial highway. It will be seen that on Moncton, New Brunswick, four routes converge, one from Charlottetown, Prince Edward Island; a second from Sydney, Nova Scotia, via New Glasgow; a third from Halifax, N.S.; and a fourth from St. John, New Brunswick. From Moncton the airline streams away westward through Megantic, Montreal, and Ottawa to Emsdale, or Amesdale—a location between North Bay and Sudbury, where the line from Toronto joins the main route. From Emsdale the line strikes roughly north-north-west to Cochrane, high up in Ontario. Here it swings almost due west through Kapuskasing, Sioux Lookout, Winnipeg, Regina, Moose Jaw, and Medicine Hat to Lethbridge, where a branch forks northwards to Calgary and Edmonton. From Lethbridge the main artery carries on westwards through the Crow's Nest Pass to Grand Forks, almost on the border, and Vancouver.

It is intended that all fields shall have a revolving beacon of some 2,000,000 candle-power and both obstruction and approach lights. Fireproof hangars, caretakers' quarters, meteorological and refuelling facilities will be provided at all the regular landing spots, and at some of them broadcasting, radio beacon, and teletype apparatus will be installed.

No date has been set for the completion of this ambitious project. At the time of writing, at least two designers are said to be preparing plans of machines intended to be suitable for service on the trans-Canada route. Some labour trouble has recently been experienced in western camps, following charges of militarisation and of a refusal to listen to complaints. A number of men walked off in British Columbia, and one of them laid their case before Lord Bessborough, the Governor-General, who is on a farewell tour. They subsequently reached Vancouver, where assistance was refused by both city and provincial authorities, and they were last heard of while celebrating a successful "tag" day, in the course of which sympathetic residents of the coast city contributed over a thousand pounds towards their relief fund.

## CROYDON

*Easter Figures and the Cup Tie : The Brindisi Service Opens : The Busy Inner Circle : New Lighting for the Airport : Obscure Airport Language*

**F**IGURES are now available showing that between Thursday morning and Tuesday evening over Easter, three thousand passengers crossed the Channel by air from various airports. Croydon dealt with two thousand three hundred and seventy of them.

On Saturday morning there were Cup Tie enthusiasts all over the place. I thought them more subdued than usual—no rattles and only one parti-coloured bowler hat. About one hundred of them, male and female, succumbed to the honeyed tones of the famous Joe Chamberlain, who urged them, through a megaphone, to fly by Surrey Flying Services. Their friends on the hotel roof attempted repartee, but "Joe" was too much for them.

On Sunday there was a considerable crowd awaiting Miss Jean Batten, whose bad luck prevented her arrival then; she arrived on Monday. Imperial Airways passengers, who left Baghdad on Tuesday at 10 a.m. and arrived at Croydon at 11.45 a.m. on Friday, waved farewell to Miss Batten before leaving Baghdad.

Sunday, too, was the inaugural day of the Imperial air service to Brindisi via Paris, Marseilles and Rome already described in *Flight*. The service was opened with the Avro 625 *Ava*. This is a definite step in the right direction, and doubtless it will develop as part of the Imperial passenger service in due course.

Mr. Huggins, Prime Minister of Southern Rhodesia, arrived by Empire service on Sunday and the same day the A.B. Aero-transport Fokker F22 arrived from Scandinavia for the combined K.L.M./A.B.A. demonstration on Monday.

Olley Air Service has been busy as usual. Trips done include a Scottish golf tour, Torquay and back, Paris via Cardiff and Le Touquet, Jack Hylton to Liverpool, and Mrs. van der Elst, the anti-capital punishment enthusiast, from

Croydon to Newcastle. There was also a flight to St. Ives, Cornwall.

Inner Circle Air Lines have been doing well. Mr. Pugh informs me that passenger traffic has been good and quite a lot of freight has been carried. One interesting parcel consisted of spares from Airspeed, of Portsmouth, which reached Heston by P.S. and Isle of Wight Aviation, was then carried to Croydon by Inner Circle, and caught the Imperial Empire machine for Calcutta. Quite a number of prospective air line passengers make the trip between Heston and Croydon to see if flying suits them, and small children are so given their air baptism.

A lady who has travelled extensively all her life had urgent need to come to London from Paris quickly, so she flew for the first time by Air France. She returned by Imperial, and now asserts that "by air" is the only way to travel.

New lighting is installed at the Airport, but is not yet in use. There are eight fixed floodlights of about a million candle power each, spaced around the landing ground. Very much better landing lighting is expected, and a sudden change of wind, which used to be baffling under the old system, will be immaterial in future.

Airport language is obscure to strangers. Q.B.I. might be a brand of dinner ale, and E.T.A. is also puzzling. The latter means the pilots' estimated time of arrival "wirelessly" to the control tower so that companies can inform passengers' friends when the aeroplane is due.

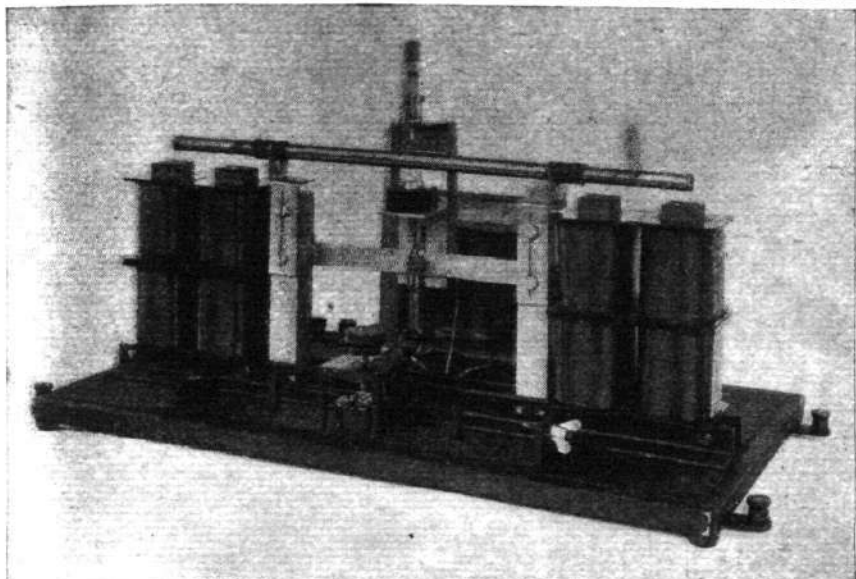
Olley's, I forgot to mention, took cycle club members with machines from Croydon to Hatfield on Sunday. They were collected again and brought home in the evening. The idea was an all-day ride in Hertfordshire without the necessity of cycling through London traffic in either direction.

A. VIATOR



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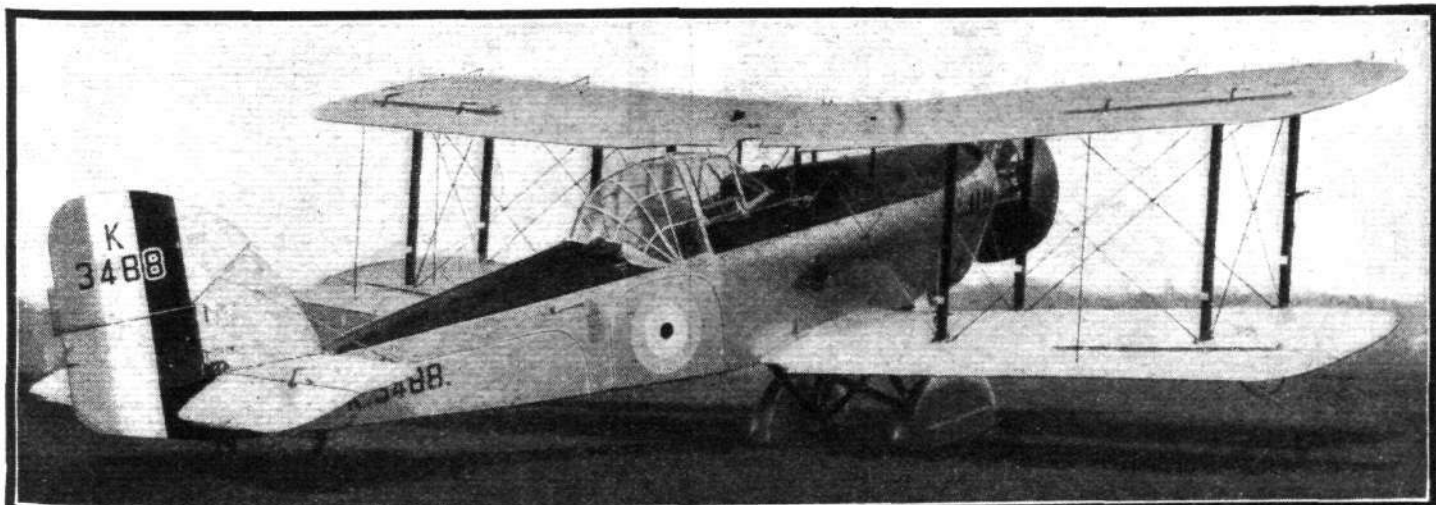
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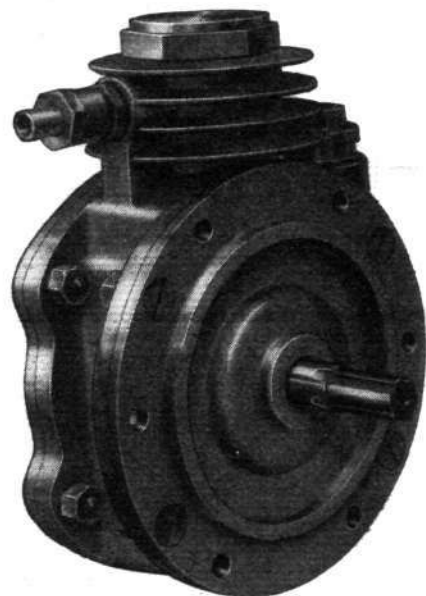
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## THE WEEK AT HESTON

### *Airwork's New Policy : Easter Traffic : United Airways' Isle of Man Service*

**I**N its six years of existence Airwork, Ltd., has worked in the direction of fulfilling general aviation requirements. In the beginning, however, the company decided to hand over subsidiary lines of business to tenant companies already experienced in their operation. An important step has, however, now been taken towards the centralisation and simplification of Heston service.

Airwork, Ltd., has adopted a sales policy which will be directed side by side with its existing lines of business. The new aircraft sales department will be under the management of Mr. J. J. Parkes, for several years well known as service superintendent and chief test pilot at Heston. As an initial step, the assets of Henlys' aviation department have been acquired, and Airwork is now in a position to handle the sale of all types and makes of aircraft at Heston. Mr. Brian Allen has resigned his position and is starting a business in his own name with offices at Croydon and Southend Airport, of which he is already a director. Mr. Allen's Croydon offices should be ready during the coming fortnight.

Exactly 800 arrivals or departures of aircraft, apart, of course, from those made by the flying school pupils, were registered over the Easter week-end. Jersey Airways carried 213 passengers on the Heston-Jersey route, Spartan Air Lines

carried approximately 200 passengers between Heston, Bembridge and Cowes, and the British Air Navigation Co., Ltd., carried about seventy passengers between Heston and Le Touquet. The new Inner Circle service between Heston and Croydon carried fifty-eight passengers during the same period, and bookings on this line are coming in very well.

United Airways' Isle of Man service, calling at Blackpool, was inaugurated on Tuesday, when representatives of the Government and the municipalities in question took part in a civic lunch at Blackpool. A party, which included Lt.-Col. F. C. Shelmerdine, flew from Heston to Blackpool in two D.H.86s, and a D.H.89 for the lunch. Sir Philip Sassoon, Under-Secretary of State for Air, was to fly up separately. These services will run right through twice daily each way. Passengers will be able to connect with additional services from the Isle of Man to Blackpool, Carlisle and Glasgow. In conjunction with Northern and Scottish Airways passengers will also be able to make connections for Campbelltown and Islay. A complete report of the inauguration will appear in next week's issue of *Flight*.

British-American Air Services, the new charter company, are running special passenger machines from Heston to all the most important events in England and Ireland.

### **G.A.P.A.N. Lectures**

The lectures to be held, as already reported in *Flight*, at the Guild offices, in connection with the October navigators' examination, started last Monday. There were still a few vacancies at the moment of going to press. The time for the lectures is 7.45 p.m., and the days are Monday and Thursday.

### **Air Mails in France**

Since January, when the French internal air mail project was submitted to the Chamber of Deputies, nothing much has been heard of it. However, as *Flight* remarked in its article describing the system in the issue of January 17, the company, Air Bleu, did not expect to start operations until May.

It has now been announced that on May 15 the first two routes, Paris-Arras-Lille and Paris-Tours-Poitiers-Angoulême-Bordeaux, will be opened. Later, probably on June 1, the Paris-Toulouse section will be covered; on July 1 the system will be extended to Le Havre and Strasbourg, and on or before August 1 Nantes will be brought in. A map of these routes was published in the issue mentioned. Incidentally, Air France already operate over the Strasbourg, Toulouse and Bordeaux sections, but these are essentially passenger services going further afield in each case. Caudron "Simoun" monoplanes (180 h.p. Renault "Bengali"), with a cruising speed of 168 m.p.h., will be used.

### **A Guernsey Service**

Yet another complicated land and water journey will be simplified and shortened when Cobham Air Routes, Ltd., open, next Monday (Jubilee Day), a twice-daily service between Croydon and Guernsey, via Portsmouth and Bournemouth. The whole journey will be made in two hours, including stops, and Airspeed "Envoys" will leave Croydon at 9 a.m. and 2.30 p.m. The return machines will leave Guernsey (L'Erée aerodrome) at noon and 5 p.m. Transport will be provided at all points, that for Croydon leaving the Victoria Coach Station.

At Portsmouth, of course, the service will connect with the Portsmouth, Southsea, and I.O.W. services to the Isle of Wight, and the through fares will be 65s. single and 124s. return. Christchurch aerodrome is used for Bournemouth.

The official statement explains that three-engined machines will be used for the crossing between Bournemouth and Guernsey. There is little doubt that these are the Westland "Wessex" machines recently purchased. L'Erée aerodrome is comparatively small and unsuited at present for use by really high-speed modern machines, though in due course, no doubt, development will permit the use of "Envoys" throughout the route. The "Wessex" is an ideal type for the work and has, in addition, the reliability provided by three engines. In the meantime, the fact that the "Wessex" have to be ferried from Portsmouth, where they are housed, to Bournemouth provides another necessary service between these points.

### **B.A.N.C.O. Closes Down**

The negotiations for the reorganisation of the British Air Navigation Company have broken down and the year's services will not, therefore, be put in operation. Brighton will miss their first tenants at Shoreham.

### **Another Air Mail Increase**

During the first quarter of the year the total mail carried on Empire air services showed an increase of 86 per cent. on that carried during the same period last year. Something like 800,000 more letters were sent by air from this country.

### **To the Isle of Wight**

After May 31, Spartan Air Lines, who are now running for the season in conjunction with Railway Air Services, will operate direct services to Sandown, in addition to Bembridge and Cowes. Travellers will, of course, have the benefit of all the facilities made available by the railway companies.

### **Increasing Passenger Capacity**

As passengers are now carried on the Singapore-Brisbane section of the Imperial route, and as mails and freight take up such a high proportion of the available load, it is probable that, in order to increase the seating capacity to cope with local traffic, landings will be made, when necessary, at Palembang. Waingapol will also be used when the aerodrome there is ready for use.

### **Egypt to Palestine**

Misir Airwork's Palestine service will now operate daily, including Sunday, in each direction. This service carries the Syrian and Palestinian mail, as well as daily editions of *Al Ahram*, the Egyptian paper.

The company is shortly taking delivery of a D.H.86 with either fourteen or ten seats according to the work in hand. Two pilots and radio equipment will be carried.

### **The Clipper Home Again**

Perhaps because the base arrangements had not been completed—or for diplomatic reasons—the special Sikorsky S.42, which has been named *Oriental Clipper*, returned from Honolulu to the mainland on April 23.

The return flight was made at an average of only 114 m.p.h., and twenty-one hours were taken for the trip. She had been battling with strong head winds throughout the night and flew at various altitudes. Apparently the ardent philatelists, who made up the passenger list, had an uncomfortable passage.

All of which goes to prove that a considerable reserve of fuel, with a consequently decreased payload, must be carried on this service in order to deal with possible emergencies. The extended navigation and fuel consumption tests have not been valueless. Perhaps a supply and emergency boat between Honolulu and California will be considered necessary for safety.

## A TWO-STAGE SUPERCHARGER

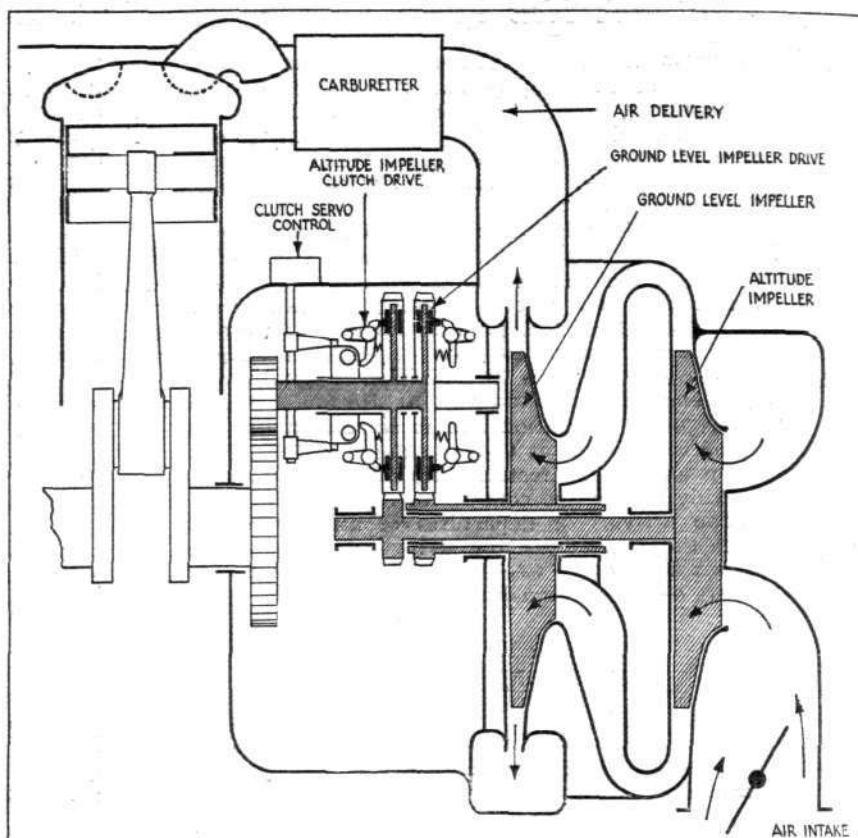
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Less well known, probably, is the fact that on his recent long-distance flights at great heights Wiley Post, the American pilot, has been using in his *Winnie Mae* a supercharger designed by Farmans and built under licence in America. Still more recently a series of tests have been made in France with superchargers for the U.S.S.R. These were of the two-speed type, one gear ratio maintaining a pressure of 760 mm. Hg up to an altitude of 2,000 m. (6,560ft.) and the other up to 5,500 m. (18,400ft.). The efficiency of the two-speed supercharger is claimed to have been such (68 per cent.) that the use of an inter-cooler was unnecessary. During the tests the speed was changed 250 times without reducing the speed of the engine, and on stripping after the tests the parts were found to be in good condition. Operation of the two-speed drive, incidentally, was by hydraulic control requiring a very small effort from the pilot.

Still more recently, we are informed, the Farman company has brought out a two-stage supercharger in which the two impellers, which are in series, are driven by friction clutches, that of the second impeller being under the control of the pilot. The two-stage supercharger is shown diagrammatically in the accompanying sketch.

It would be possible to obtain a high degree of supercharging with one impeller, but its speed would have to be very high and would give rise to various troubles, among them being that a point is soon reached at which the tips of the impeller blades reach the velocity of sound, and this is accompanied by a marked drop in efficiency. To get over the



The Farman two-stage supercharger in diagrammatic form. As in other French superchargers, the carburetter is on the delivery side of the supercharger; British practice is to fit it on the intake side.

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## COUPE DEUTSCH PREPARATIONS

### *Caudrons Qualify at Over 250 m.p.h. : 500 h.p. from 8 Litres in New Models*

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The three Caudron machines which have just passed their qualifying tests are similar to those which flew in last year's contest. They have, in fact, the same six-cylinder supercharged 300 h.p. Renaults, and the same variable-pitch Ratier airscrews with which they were originally fitted.

Last year mechanical trouble precluded the use of the retractable undercarriages designed for the machines, but during this year's contest they will be flown with the landing gear retracted, as was originally intended.

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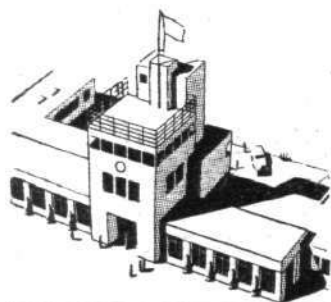


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## A TWO-STAGE SUPERCHARGER

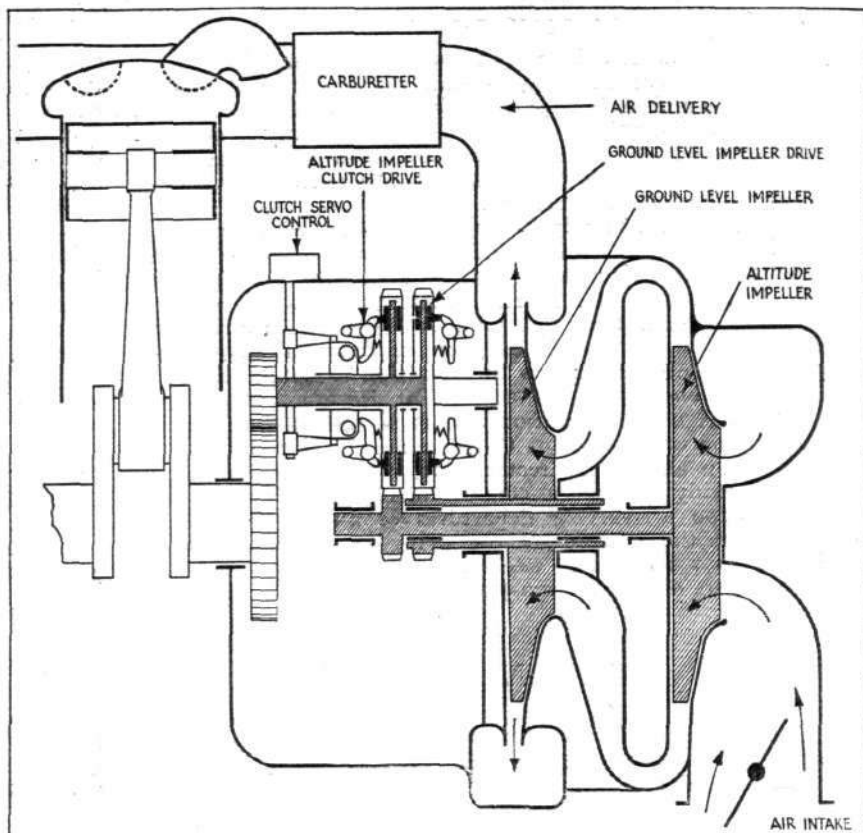
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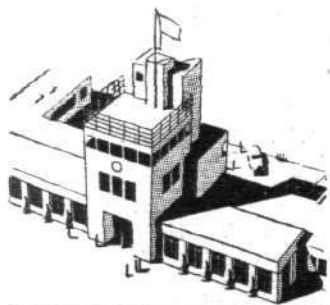


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# PRIVATE FLYING

LORD SEMPILL, CONTINUING HIS AUSTRALIAN TOUR, FLIES OVER HUNDREDS OF MILES OF "BILLIARD-TABLE" COUNTRY

**A**FTER having been very kindly entertained by Sir Ernest and Lady Clarke at Government House, where I met a number of interesting people, I was asked later to give a broadcast address.

I left Hobart in very cold weather against a strong headwind, which on the ground was upwards of thirty miles an hour. Taking the usual route back to Launceston, I decided to refuel there and then fly back to the mainland, en route for Adelaide, *via* King Island. With a view to avoiding the strong wind at higher altitudes, I therefore laid my course for King Island down the river which flows from Launceston to the open sea, striking direct across the water from that point. Flying low, I was able to avoid the worst head winds, but, even so, was much impeded on my flight to King Island. Here I found the abundance of game attracted a good many people who visit the Island for the shooting. Several attempts have been made to establish settlements, but these were not very successful until, some time ago, a party of Lancastrians arrived and took the situation in hand with marked success.

## Approaching Adelaide

**L**EAVING King Island, I set off across the eighty miles of sea which separates the Island from the mainland. I arrived eventually at Ballaaroork, where I found the site selected for landing quite good. I was unable to stay long, as Adelaide lay distant more than 250 miles, which I hoped to complete before dark. Battling against headwinds had, however, rather upset my calculations, and it was dusk as I arrived over the South Australian capital. One has to be careful in such circumstances in approaching Adelaide, particularly from the south and east, as there are many high hills in the vicinity. There being no beacon or boundary lights on the aerodrome, I missed the landing ground the first time I flew over the city, and decided to fly out to sea and work out a compass course which would bring me directly over the landing field.

This time I was successful, and, as I approached, the control officer sent up a green flare, and I was able to discern the path of kerosene flares which they had kindly laid out when it became evident that I could not arrive in daylight. With the help of these I landed safely, but as I had been advised that repairs were being effected to parts of the aerodrome I was a little apprehensive as to the state of the surface. After landing, therefore, I took the precaution of ascertaining from the officer on duty what obstructions were likely to be met with before taxiing in.

## Interesting Personalities

**T**HERE is not much night flying done in South Australia at the present time, but the authorities are alive to the necessity of providing better facilities against its future development. There is no doubt that night flying at such an important centre as Adelaide must increase, and although the facilities available have so far been sufficient for the activities of the Aero Club at Parafield, more modern equipment must be made available for the purposes of commercial air transport.

I stayed four days at Adelaide, and met many interesting people, both in the aviation world and connected with

# A Limitless Aerodrome

other activities. Here I had the opportunity of discussing my New Guinea experiences with the secretary and directors of Guinea Airways, and was much impressed by the excellent statistical information prepared on a weekly basis available to the directors of the company. I also had a long talk with Captain Miller, who is associated with Sir MacPherson Robertson in running the MacRobertson-Miller Aviation Company, which now operates the longest internal Australian route, between Perth and Daly Waters. Captain Miller is a man of great experience, having very nearly 20,000 hours' flying to his credit.

Leaving Adelaide, I felt I was really on my homeward journey; the first stage of the 1,100 miles' flight to Kalgoorlie, which I hoped to complete on the same day, was Ceduna, which lies 350 miles to the north-west of Adelaide. The direct route takes one across two considerable stretches of water, and after flying over Spencer's Gulf one notices that the land for some distance is very flat.

Ceduna, although not a very large town, has quite a good aerodrome, and I found on landing that the town clerk and the leading citizens had turned out to meet me. I could not, however, stay very long to enjoy their hospitality, and after refuelling left for Forrest, which is about 350 miles farther on. The railway which runs to Ceduna continues north for a few miles to Penong, and then one strikes out on a north-westerly course across the bush, making for the main Trans-Continental Railway line that connects the east with the west. My aim was to strike this line in the neighbourhood of Cook, where there is a landing ground, but, in point of fact, for hundreds of miles towards the west the whole country is one large aerodrome, and the Nullarbor Plain is probably the flattest piece of ground of such an area in the world.

## An Aerodrome Surprise

**A**FTER flying a further 150 miles or so over this flat, uninhabited area, I came to the aerodrome at Forrest. This landing ground is used mainly by the service run by Major Brearley between Perth and Adelaide and known as West Australian Airways; the company uses "Dragons." The aerodrome, which is very well run, proved to be the only fully equipped twenty-four-hour landing ground I had seen in Australia. It is of good size, with a beacon showing the position of the aerodrome, boundary lights to mark the landing area, and a floodlighting system for landing by. Compared with aerodromes of many of the large cities in the Commonwealth, the facilities are quite modern.

From Forrest to Kalgoorlie there are beacons spaced every sixty miles or so, and on this section the conditions for night flying are ideal.

About seventy miles before reaching Kalgoorlie I met a very heavy line squall travelling northwards. Being too high to climb over and too deep to get round, I decided to increase speed and run across the front of it. About half a mile on the front of the line of the storm it was quite calm, but on the storm front itself it was very rough, and dust and every form of vegetation was being blown round and sucked up into the cloud formation to a height of several thousands of feet. I was flying at 3,000 to 4,000 feet, and hoped to get across the front of the storm before it broke, but, being, I suppose, a little too close, I struck very turbulent conditions, with the result that the machine was being thrown about all over the sky. This experience, though unwelcome, was of short duration, and, after passing through some rain, I soon arrived at Kalgoorlie.

**Private Flying****FROM THE CLUBS***Events and Activity at the Clubs and Schools***YORKSHIRE**

Club machines flew 40 hours last week, and members made trips to Bournemouth, London and Liverpool. Mr. and Mrs. Spencer Goodfellow joined as associate members. A "Moth" and a "Puss Moth" visited the aerodrome.

**REDHILL**

During the week ended April 26, 58 hr. 20 min. were flown by the Redhill Flying Club. Cross-countries were made to Yeaton, Tollerton, Lincoln and Leicester. New members were Capt. O. P. Jones and Messrs. G. R. Mack, M. P. Gore, M. H. Illingworth and A. W. Saunders. Amongst visitors by air were Mr. B. O. Davis on his way to Ostend, and Messrs. Norwood and Gardner, and Miss Forsyth.

**READING**

Twenty-eight "raiders" from Shoreham, Portsmouth, Southampton, Brooklands and Hanworth flew on the "Dawn Patrol" last Sunday. Twenty-two of them were "intercepted," so there were only six free breakfasts. There was a high proportion of lady pilots, and Mr. "Sonny" Banting arrived clad in trousers, summer sports shirt, and fur gloves in an open-cockpit "Moth." The five machines from Brooklands took off and left in very good formation.

**NORTHAMPTON**

On Saturday, May 4, the Northamptonshire Aero Club, in co-operation with Mr. R. O. Shuttleworth, will give an air display on the occasion of the town of Bedford's Jubilee celebrations. The field which has been chosen is close to the town, and measures 600x600 yd. Private owners are cordially invited, and for those who wish to stay the night, housing accommodation has been arranged at Cardington.

On Sunday Lord Willoughby de Broke brought his "Swallow" to Sywell, and several members flew it during the afternoon.

**CASTLE BROMWICH**

New members include Messrs. H. S. Smith and R. Dunning. Mr. G. Dutton has passed his "A" licence tests, and "cross-countries" have been made to Braunstone and Sywell.

Among the visitors during the week were Flt. Lt. Johnson, Flt. Lt. Tyson, Mr. Van Oppen, in a Spartan "Cruiser," Mr. Palmer, and Mr. Yates, who came over in an "Autogiro."

Flying times were 14 hr. dual and 11 hr. 35 min. solo.

Alfred and John Ellison, the Birmingham brothers who left Castle Bromwich for Morocco a week ago to take part in the International Air Rally there, have won the Coupe Comte de Montigny and were placed second in the Fedallah Race. Thus the Midland Aero Club are represented in prize lists of the two principal events of the Rally.

**HANWORTH**

Quite a number of machines from Hanworth attended the "Dawn Patrol" at Reading on Sunday last. Weather conditions were generally bad during the week, and kept flying time down to 22 hr. 50 min. During the fine periods, however, "cross-countries" were made to Plymouth, Brough, Farnborough, Lympne and Stoke-on-Trent. Mr. N. R. Shuttleworth made his first solo flight, and Mr. G. Pickering became a member.

The total flying time at the Autogiro School for the week ended April 21, was 39 hr. 55 min. New pupils included Enrique Munaiz, a Spanish "A" pilot, and R. J. Ashley. The latter flew solo, and on completion of a concentrated course left with a new C.30 to join Sir Alan Cobham's Circus. Other soloists included Messrs. G. P. Moss, J. A. McMullen (after a refresher course) and Major A. Q. Cooper, who, incidentally, had not flown solo since relinquishing command of the R.N.A.S. Experimental Section in 1919.

The School has received Air Ministry approval to give instruction in blind flying under the supervision of Mr. H. A. Marsh, one C.30 being equipped for this purpose.

For the week ended April 27 the Autogiro School's flying time was 27 hr. 45 min. Charter and other trips occupied 10 hr. 25 min. Mr. Kinch has become a pupil for the full "A" licence course, and Señor Munaiz has made his first solo. A new C.30 was collected recently from Manchester for Mr. A. Batchelar, and Mr. H. A. Marsh has delivered a similar machine, on floats, to Felixstowe for Air Ministry acceptance tests.

**BRISTOL**

Three free flying scholarships are being awarded by the Bristol and Wessex Aeroplane Club this year; one is reserved for competition among non-flying members of the club. Full details may be had on application to the club offices.

Messrs. B. Douglas, M. F. C. Smith and P. E. Cadbury have become pilot members, and Mr. F. Hendy has made his first "solo" flight.

**NORTH STAFFS**

To celebrate Their Majesties' Silver Jubilee, the committee has decided to offer a free scholarship for "A" licence instruction. Flying tests will be made by the club's instructor for which the candidate will be required to pay £1 towards expenses. Selected candidates will then undergo further tests, and the winner will be selected from the final batch.

**CAMBRIDGE**

One of the School machines is being fitted with dual blind-flying instruments, and should be ready for work next week. Messrs. Green, Jun., and D'Orey passed their "A" licence tests, and Mr. Green, Sen., has become the owner of an Avro "Avian." The "Puss Moth" has made a number of charter trips to various parts of the country, including Breccles and Cornwall. Mr. Tollemache has arrived with his "Moth."

The unkind weather resulted in the flying times amounting to only 25 hr. 40 min. dual and 6 hr. 10 min. solo.

**NORFOLK AND NORWICH**

An ambitious programme has been arranged for Jubilee Week and for Empire Air Day. On May 6 the "Fox Moth" will be joy-riding, and the Norwich Jubilee Queen will probably make a flight from the aerodrome. In the afternoon of May 9 No. 207 (Bomber) Squadron from Bircham Newton will visit the Norwich Municipal Aerodrome, and will be received and entertained to tea in the clubhouse by the Lord Mayor.

Jubilee Air Displays, led by Lt. O. Cathcart Jones, will be giving a show on Saturday, May 11, at 2.15 p.m. Flights will be available in the "Comet" flown by Scott and Black in the MacRobertson race. On Empire Air Day the aerodrome will be open to the public from 2 p.m. to 6 p.m. at a charge of 3d. The first hundred "joy" flights will be given at half price. A programme has been arranged by the Flying Committee.

**YORK COUNTY**

A big increase in flying time is reported for April; 120 hours have been flown. This figure is approximately treble that for the corresponding period last year. Well over twenty pupils are now under instruction.

Formation aerobatics are becoming an institution. Two "A" licence tests have been made by Miss Morris, and Mr. Artindale, and Mrs. Monteith, and Messrs. Pilkington, Gullick, Monteith and Knox have made first "solos."

The clubhouse decorations are nearly finished (a Sherry Party will be held at 12 p.m. on Sunday, May 5, to mark their completion), and for the benefit of those using the clubhouse it has been decided to install wireless in order to obtain Air Ministry weather reports and to listen to air liners in flight.

The Visitors' List for April has been heavy, and includes the "Envoy" of North-Eastern Airways, which twice failed to get into the municipal airport, an Olley "Dragon," Lord Ronaldshay, Lord and Lady Kinloch in a Klemm, and Miss Connie Leathart and Mr. McEver, from the Newcastle Club.

**HATFIELD**

The second "Tiger Moth" of the London Aeroplane Club equipped for blind flying is now in action. First "solos" have been made by Messrs. F. J. Bush and W. Mitchell, and Mr. H. A. Olivier has completed his "A" licence tests. Miss M. K. Graham, Messrs. G. W. Kerr, H. Forster Withy, E. A. Goldsmith, A. V. Dykes, and F. A. Gardiner have become members. Last week's flying time amounted to 61 hr. 40 min., but during the previous week no fewer than 109 hr. 39 min. were logged.

Wing Commander W. H. de W. Waller, F/O. J. A. Edwards, and C. G. Gardner have become members of the Royal Air Force Flying Club.

At Hatfield the building of the second "Comet" for the French Government is proceeding apace. Mr. Lynch Blossie has taken delivery of a "Rapide" for United Airways, and Flt. Lt. Mellor, second personal pilot to H.R.H. The Prince of Wales, has flown to Plymouth in Capt. De Havilland's "Leopard" with his bride. Eleven "Tiger Moths" have been ordered by Brooklands Aviation, Ltd. and one "Leopard" is to be delivered to South Africa.



**Private Flying****HERTS AND ESSEX**

The competition for the "Margaret Blackshaw" Challenge Cup will be held on Sunday, May 5, and will take the form of a triangular "cross-country" flight. Marks will be allotted for the approach and landing on the return, as well as for merit shown during the flight itself.

Messrs. B. F. Tonge and F. Rees have passed the technical and flying tests for their "B" licences, and are awaiting suitable weather to do the night-flying test. First "solos" have been made by Messrs. D. W. Grant, D. Griffin, and S. M. Shute.

Flying times for the week ending April 28 amount to 47 hr. 15 min., of which 22 hr. 30 min. represents "solo" flying on Club machines.

**CINQUE PORTS**

Several members flew to Ostend for the Easter week-end. Mr. J. G. Brown, chief ground engineer, flew to Croydon on Tuesday and returned, having successfully qualified for the "B" and "D" ground engineers' licences. He already held the "A" and "C" licences. Miss E. M. Thrupp has joined the club to take her "A" licence, and Col. and Mrs. Fellows have become ground members. Mr. Seaman has become a country member, and stayed at the aerodrome on Tuesday night on his way to London from Monte Carlo, and Mr. H. R. Presland, who owns a "Moth" and is the brother of Mr. R. Presland, who has been a member for some years, has joined as a private owner member.

On Saturday, "G-ABDL" was flown to Leeming by Mr. L. H. T. Cliff, who gave a demonstration and negotiated its sale. He returned to Lympne with Mr. V. Hodgson, who later completed a night flight for his "B" licence. On Sunday Mr. L. Lipton flew over in his racing "Moth."

The weather has been kind, and 71 flying hours have been recorded.

**BROOKLANDS**

A great many people are taking advantage of the blind-flying facilities at Brooklands. Mr. Madders has made his first "solo," Messrs. Machin and Gold have completed their "A" licence tests, and Mr. Morris has made a "cross-country" flight. Capt. Mackenzie is making a quick recovery, and it is hoped that his wedding will take place on May 21. Miss Weinberg and Mrs. Cree are flying again, and Miss Malcolm has returned from the West Indies to fly her new machine. New pupils include Miss Brice, Sir William Firth, and Messrs. Garland, Daybell, Lamb and Hyman. Major Hargreaves has taken delivery of a new Miles "Hawk," and a "Falcon" has been delivered to Maddox Airways. Visitors last week included Capt. "Freddie" Guest in his cabin Klemm.

Over twenty machines visited Brooklands on Easter Monday, and on the following day a tea dance was held at the aerodrome.

**LONDON GLIDING**

Flying, of course, only at week-ends, the London Gliding Club flew 118 hr. 30 min. during the past month. Twelve members have completed their tests for soaring certificates, six have gained primary certificates, and the first seasonal cross-country flight has been made, as well as a night flight.

The night flight was made in the club "Falcon" by Mr. C. Nicholson, leaving Dunstable Downs at 2 a.m. and landing by car head lights. The first cross-country flight was made by Mr. Briscoe in the Scud II; he landed fourteen miles away after soaring locally for about an hour.

Aerobatics—voluntary and involuntary—are increasing in popularity. Mr. Collins, for instance, emerged from a storm cloud, in which he had been engulfed for ten minutes, in an inverted spin. With his usual tenacity he returned into the cloud! Both he and Miss Meakin have been doing a good deal of voluntary aerobatics.

**A TRIP TO PALESTINE**

**A** FLIGHT to Palestine and back recently made by Mr. L. Lipton and his friend Mr. Goldsmith illustrates something of the use to which the ownership of a light aeroplane can be put. Although the time taken for the flight was longer than that taken by normal air lines, they were able to order comings and goings to their own satisfaction, and the mere business of flying from here to there, in any case, is rendered much more enjoyable if one is in charge of the craft. Even in these days of international restrictions the difficulties, it will be seen, are largely smoothed over for the private pilot, who, as sometimes opposed to the mundane passenger, is viewed with interest.

Mr. Lipton is well known as a private owner who for many years has participated in meetings and races, not only in this country but on the Continent as well. His latest trip to Tel Aviv and back was made in connection with the Maccabiah, which was being held in that new all-Jewish Palestinean City.

Mr. Lipton and Mr. Goldsmith left Stapleford Abbots aerodrome on March 21 in a "Puss Moth" ("Gipsy Major") and stayed the first night in Paris. From there they went on next day to Marseilles and, after refuelling, continued towards Pisa. Unfortunately, they forgot to allow for the one hour difference in time between France and Italy, and soon after they passed over Genoa they realised that they could not reach Pisa before dark. By using Sarzana they were breaking the regulations, but the Air Force Commandant saw the sense of their ultimate action, and treated them extremely well.

Next morning they arrived early at Pisa, where they were met by our old friend Sig. Remo Abbate, the Commandant of the Civil Airport. As usual, he went out of his way to do everything they wanted, and make them feel that, as travellers by air, Italy was glad to see them. They stayed there the night, and reached Naples the following day.

The day after that their route lay over the varied country which includes a trip round the top part of the "ankle" of Italy across the straits of Messina via Sicily to Tunis. After leaving Naples they had intended to land at Catania, but this aerodrome, which is particularly soft alluvial soil, was suffering from the effects of excessive rainfall, and therefore unserviceable, so they landed at Palermo instead. After refuelling they climbed to 12,000 ft. for the trip across the sea to Tunis, and gained very much by doing so as they found the air dead still and everything extremely pleasant. Nevertheless, they did not bless the authorities whose

prohibited areas make the sea crossing at that point very much longer than it need otherwise be.

They reached Tunis safely, and after a pleasant night left the next morning for Gabes. Here they had to fly in rather unpleasant conditions, with much low cloud and a very strong wind. However, the weather improved as they went on, and by the time they reached Tripoli at 4.0 p.m. it was quite good. Early next morning they left for Sirte—their first real desert aerodrome; they found it hot, and also had great difficulty in keeping the sand out of the oil while replenishing the engine. They refuelled again at Benghazi, then made the 226-mile journey across the desert to the Italian aerodrome of Tobruch in 1 hr. 55 min. Sig. Carlo Sandon, an officer of the Italian Air Force, fixed them up with sleeping accommodation in the camp.

Next day they went on to Cairo, after stopping to refuel at Mersa Matruh. At Cairo Mr. Axler, of the Socony-Vacuum Oil Co., looked after them and saw to the servicing of their machine. After their stay in Cairo, which was prolonged to two days to enable the engine to have a 25-hour overhaul, they went on to Palestine, where they had to land at Ramleh, as the civil aerodrome at Lydda was out of action.

They were both very much impressed with Jerusalem and Tel Aviv, particularly the latter, which, as many readers will know, is the result of a modern Jewish settlement in Palestine.

The return journey lay more or less along the same route, through Tobruch (where Sig. Carlo Sandon and his Commandant, Capt. Kellermann, again insisted upon their staying the night), through Tripoli and Tunis to Sicily, where a stop was this time made at Catania instead of Palermo. After reaching the coast of Sicily the weather became very bad and extremely rough, and on many occasions the "Puss Moth" was thrown up and down in bumps of from 500 to 600 ft. at a time.

Next day, on their way to Naples, the weather became even worse, and the visibility was so bad that a landing was made at Praja-a-Mare until it cleared, which it did after three-quarters of an hour, so that the journey could be continued to Rome and Pisa. The last forty miles or so of this stage was very bad indeed.

From Pisa they came home through Cannes, where they stayed a night, Paris, St. Inglevert, where they were again forced to spend the night on account of bad weather, to Stapleford.

The total flying time for the 8,000 miles was 72 hr. 10 min.

# AIR POST STAMPS

By DOUGLAS ARMSTRONG

## No Jubilee Air Posts

AIR post collectors will deplore the fact that the proposed special air mail flights in connection with the Silver Jubilee celebrations appear to have been abandoned and that it will not be possible, therefore, to include in their collections "first flight" covers carried on that auspicious occasion. The most they will be able to do is to send themselves and their friends letters by air franked with the new Jubilee stamps on May 7, which is the actual date of issue (Monday being a Bank Holiday), but that will be a poor substitute for the rather elaborate arrangements originally planned in honour of the anniversary of His Majesty's accession.

It is understood, however, that there is still a chance of the London-Windsor air mail service being revived later in the year for the benefit of the Jubilee Trust Fund, but without the use of a special stamp, which has been definitely turned down by the Postmaster-General. Souvenir envelopes and a distinctive cancellation, such as were granted in 1911, are within the bounds of possibility, and there is little doubt but that the idea would prove immensely popular, not merely with air post enthusiasts but with the public at large. Cdr. Sir Walter Windham, who organised the first United Kingdom Aerial Post, has already received Royal permission to land aeroplanes in Windsor Great Park on the exact site where Gustav Hamel delivered his mail twenty-four years ago, and one is hopeful that his new scheme may receive the blessing of the postal authorities before many weeks have passed.

## Colonial Air Mail Stamps

Although in the ordinary way the colonial authorities are opposed to the creation of separate stamps for air post purposes, it is inevitable that certain denominations should be employed more than others upon letters sent by air. This applies to the 65 cents value of the new unified series for Kenya, Uganda and Tanganyika that is due to make its appearance this month, the special character of this particular stamp being indicated appropriately by the vignette of an aeroplane passing over Mount Kenya. A new 8d. stamp of the Bahamas showing a flight of flamingoes over a local seascape will also be used largely upon air mail between those islands, the United States and the rest of the West Indies.

A shortage of air mail stamps of 15 millimetres, 2½ and 3 piastres occurring in the Sudan last month was met by surcharging the requisite denominations upon surplus stocks of the 3, 5 and 10 millimetres and 4½ pi. of the 1931-32 series, after the manner of the 7½ and 10 piastres provisionals created earlier in the year. From these indications it seems not unlikely that in the near future the Sudanese post office may abandon the supply of distinctive air mail stamps in favour of the ordinary postage types.

Development of the air service in New Guinea in connection with the transportation of parcels of gold dust from the diggings to the coast has necessitated the provision of two high-value stamps for payment of aerial postage upon such consignments. Of the face values £2 and £5 respectively they both present a panoramic view of the goldfields of Bulolo, with wild mountain scenery in the background. Panels upon either side contain, on the left a picture of an old Spanish galleon representing the early days of gold seeking, and on the right a New Guinea native washing for gold, typifying the present day. It is expected that these two stamps will be taken into use next month.

## Latest Issues

The island of Madagascar, now being linked by air both with France and the African mainland, is the latest French possession to be furnished with a complete set of stamps for air post purposes. The design common to all depicts an aeroplane with the markings "F-AEDT" superimposed upon a silhouetted map of the island carried out in upright rectangular format and duly inscribed "Madagascar—Poste Aérienne," the thirteen stamps ranging in face value from 50 centimes to 20 francs.

Included in the annual issue of propaganda stamps for the Tripoli Trade Fair this year, the ninth in succession, are six air mail stamps in characteristic designs showing an aeroplane flying over a desert watch tower, passing a string of camels and watched by a native girl.

Four new air-post stamps, all illustrating eagles in flight, etc., after the designs of the Viennese artist Ludwig Hesshaimer, have appeared in the tiny principality of Liechtenstein,

their denominations being 10, 15, 20 and 30 rappen respectively.

## The Air Mail Society

Sir Alan Cobham, himself the carrier of several pioneer air mails, is the latest recruit to the newly-formed Air Mail Society, of which he has been elected a vice-president. The Air Mail Expert Committee is now in being, and consists of Brigadier-General R. Ridgway, C.B., Messrs. R. E. R. Dalwick, C. H. Greenwood, T. E. Field, J. McHarg, Jnr., Francis J. Field, J. S. Davis, A. Phillips, Miss W. Penn Gaskell, and D. B. Armstrong (hon. secretary).

At the last meeting, on April 10, the president, Dowager Viscountess Downe, displayed her beautifully arranged and written-up collection of air post stamps of Columbia, which was strong in the scarce early semi-officials on the original covers. Among other choice pieces were noted two copies of the official 2 centavos air mail stamp of 1919, used on entire, etc.

Sir Walter Windham, Kt., R.N., one of the vice-presidents, is to address the society on his experiences in connection with the first aerial post which he promoted in India and Great Britain, at the next meeting, to be held at Pagani's Restaurant, London, W.1, on May 22nd.

# THE INDUSTRY

## A NEW POST

Mr. C. H. B. Price, who was previously in charge of the Skefko Ball-Bearing Company's advertising, has joined the staff of Tecalemit, Ltd., as manager of their publicity department.

## STEELS AT THE B.I.F.

Aircraft steels will figure prominently in the display of the United Steel Companies, Ltd., on Stand D.506 at the Birmingham section of the British Industries Fair from May 20-21.

## NEW SEASON'S PETROL

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## SURFACE CRAFT

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## NEW COMPANIES

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◆ ◆ ◆ ◆

## AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors. (The numbers in parentheses are those under which the specification will be printed and abridged, etc.)

Published May 2, 1935.

- 2843. BOULTON PAUL, LTD., NORTH, J. D., and BENNELL, A. F. Windscreen for aircraft. (426,438).
- 3961. SOC. ANON. SVILUPPI AERONAUTICI (S.A.S.A.). Automatic course-redresser for aircraft. (426,439).
- 13776. POELVOORDE, P. J. VAN. Gyroplanes or helicopters. (426,686).
- 19293. JONA, A. Aeroplanes, seaplanes, or other heavier-than-air flying machines. (426,689).
- 20067. MONTALEMBERT, R. DE TRYON. Balanced rotary feathering wings. (426,460).
- 25571. SOC. ANON. ALFA ROMEO. Variable-pitch screw-propellers. (426,696).
- 26281. MARTIN, E. G. Means for the control of two-way-moving devices, such as a ship's rudder. (264,385).
- 417350. (Amended specification published). BLACKBURN AEROPLANE AND MOTOR Co. LTD., and another. Fuel jettisoning valve arrangement for aircraft.



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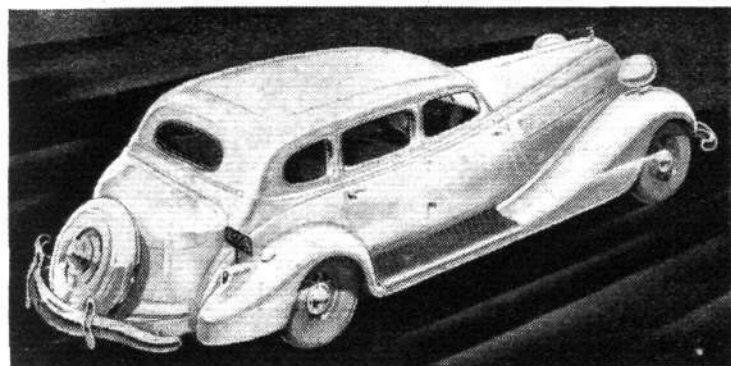
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